Financing and Ownership Structures in International Project Finance

by

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Abstract

In the past twenty years there has been a new wave of global interest in project finance as a tool for financing capital-intensive projects all around the world. The crucial elements in structuring a project finance transaction are: the risk allocation process, the determination of the best type of ownership structure, and the development of a complete and integrated set of financial and contractual arrangements.

This thesis examines the ownership and financing structures in International Project Finance. Selection of the form of business organization for a project is an important step in project development and depends on a variety of business, legal, accounting, tax and regulatory factors. This thesis presents four forms of ownership structure most frequently used for developing a project and highlights the reasons of selecting one of them.

The variety of sources of funds, with a trend towards the increasing development of sophisticated capital market instruments, provides project sponsors with flexibility to select the appropriate structure to finance a project. This thesis presents the three types of capital used in project financing and details the alternatives for financing a project from its development phase to its operating phase showing that the project financing is a dynamic process.

After having developed a basic framework for structuring an international project finance transaction, this thesis ends by exposing projects financed on a project-financing basis. These projects are characterized by some specific features, such as refinancing prior to project completion or use of capital market financing.

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Title: Lecturer, Center for Construction Research and Education

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Finally, I would like to dedicate this thesis to my parents and my brother Michaël who have continuously encouraged and supported me in making my dreams come true.

David Benouaich
Cambridge, MA
May 5, 2000

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1 Introduction

1.1 Objectives

This thesis examines the ownership and financing structures that are currently used to shape a project finance transaction. Throughout the description of mechanisms used both to select the best form of business organization to undertake a project and to structure the financial arrangements supporting the financing of the project, the thesis proposes a basic framework for developing a project finance transaction.

Chapter 2 provides an introduction to project financing by presenting a brief historical perspective, by exploring possible uses of this financing technique, and by reviewing the advantages and disadvantages of the project financing technique.

Then, Chapter 3 presents the most frequently forms of business organization used to undertake a project on a project-financing basis. For each form of ownership, the reasons associated with the choice of a particular type of business organization are described.

Chapter 4 highlights the utmost importance of project contracts in developing a project finance transaction, and therefore ensuring its success. The project company usually enters with project contractors into different project

contracts for the purposes of the development of the project. Chapter 4 provides the description of some of the most relevant project contracts, such as the off-take agreement, the supply agreement, or the construction contract. These project contracts are essentially designed to give some certainty to the project.

Chapter 5 examines the current possible ways of financing a project. First, this chapter describes the three types of capital used in project financing, and advances some of the more common reasons for the high concentration of debt in the project company. Then, this chapter details both construction financing and permanent financing, and presents the alternatives used by the project sponsors to finance a project. This chapter ends by showing project financing as a dynamic process through the life of the project from its development phase to its operating phase.

Finally, Chapter 6 advances some completed projects that are characterized by special features, such as refinancing prior to project completion or reliance on the international capital market for financing an infrastructure project.

1.2 The Global Project Finance Market

In the past twenty years there has been a new wave of global interest in project financing as a tool for financing capital-intensive projects. Though project financing has been in use for hundreds of years, primarily in mining and natural resource projects, its application to new types of projects is recent. Developing

countries have particularly benefited from the broadening of project finance applications, as illustrated by some of recent examples of IFC-supported projects[1]:

- In Argentina, in 1993, the project finance technique helped raise $329 million to finance the rehabilitation and expansion of Buenos Aires' water and sewerage services, based on a new 30-year concession. This investment, financed with IFC support, has helped improve water quality and service to a city of more than 6 million of people;
- In Hungary, in 1994, the project finance technique helped finance a 15-year concession to develop, install, and operate a nationwide digital cellular network. The $185 million joint venture project was an important part of the government's privatization program. Because of difficulty attracting commercial financing at that time, the project relied heavily on $109 million in debt and equity financing from IFC and the U.S. Overseas Private Investment Corporation (OPIC);
- In China, in 1997, the project finance technique was used to finance a $57 million greenfield project to install modern fiberboard plants in interior china to support China's fast-growing construction industry. IFC helped arrange $26 million in syndicated loans at a

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[1] This section is based on *Project Finance in Developing Countries*, Washington DC: International Finance Corporation (IFC), April 1999.

time when foreign commercial banks remained cautious about project financing in China's interior provinces;

- In Mozambique, in 1998, the project finance technique helped establish a $1.3 billion greenfield aluminum smelter. MOZAL, the largest private-sector project in the country to date, is expected to generate significant benefits in employment, export earnings, and infrastructure development. IFC fostered the project by serving as legal coordinator and preparing an independent analysis of project viability. IFC also supported the project with $120 million in senior and subordinated loans.

Globalization has brought a rapid increase in international capital flows, a wider range of financial instruments, and new investors. Between 1990 and 1997, long-term flows to private-sector borrowers in developing countries rose from about $44 billion to $322 billion, as illustrated in Figure 1.1.

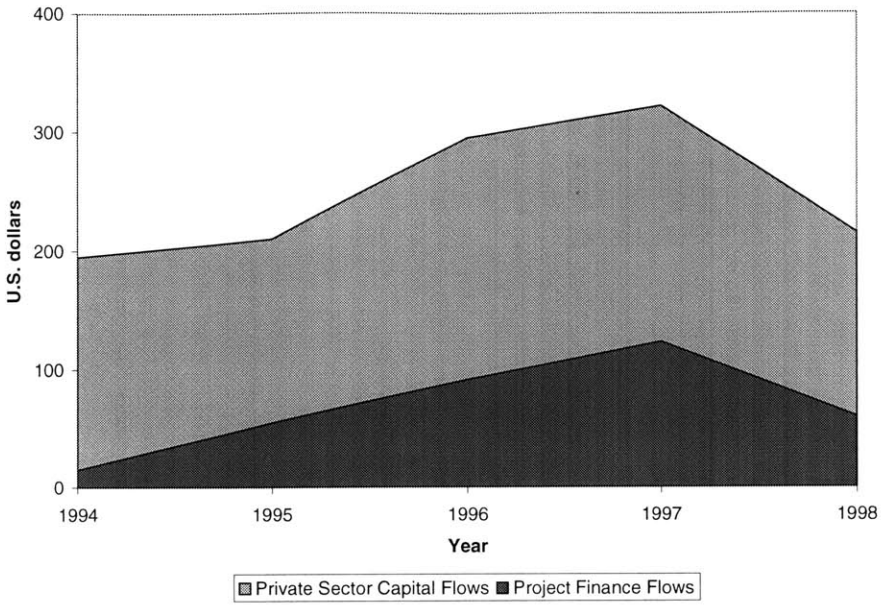

Fig. 1.1: Long-term private sector and project finance flows to developing countries, 1994-98 (Billions of U.S. dollars). Source: Capital DATA Project Finance Ware.

Globalization has also greatly benefited project finance. Project finance flows to emerging markets have considerably increased from less than $20 billion in 1994 to an estimated $123 billion in 1997. At the same time, project finance has itself helped to strengthen the effects of globalization. The liberalization and spread of financial markets have given rise to new financial instruments and a wider range of risk management techniques. Project finance, which relies heavily on the mitigation of project risks, has used these new financial products to develop and finance numerous projects.

The surge of project finance was particularly strong in 1996 and 1997, stimulated by large flows of international capital. In 1997, the number of project finance transactions worldwide exceeded 600, many of them in developing countries, and their value topped $236 billion, as illustrated in Table 1.1. Although in 1998 this value dropped back to about $111 billion, such activity can

still be seen as very positive taking into account the impact of the Asian financial crisis.

Region	Number of Project		Amount (billion of U.S. dollars)	
	1997	**1998**	**1997**	**1998**
Europe	207	104	81.7	26.2
Asia	191	63	58.4	27.5
Latin America	105	49	41.6	33.6
North America	75	33	28.4	15.0
Middle East and North Africa	35	14	22.9	7.2
Sub-Saharan Africa	11	8	3.4	2.1
Total	624	271	236.4	111.6
Share of developing countries	380	140	123.2	60.1

Table 1.1: Project finance transactions by region, 1997-98. Source: Capital DATA Project Finance Ware.

Project finance flows to emerging markets reached an estimated $123 billion in 1997 before the financial crisis. The growth in the number of transactions was also consequent, rising from less than 50 in 1994 to more than 400 in 1996 and 380 in 1997, before declining significantly in 1998. Despite the financial crisis that began in mid-1997, the investment needs in many developing countries remain enormous. Meeting these needs will require a continuous reliance on and appeal of private-sector participation.

Most project finance transactions of the past two decades have been concluded in industrial countries, but the project financing technique has also played a significant role in some developing markets. In 1997 and 1998, combined project finance flows to developing countries totaled about $183 billion, representing more than half of the total project finance flows recorded worldwide, as shown in Figure 1.2.

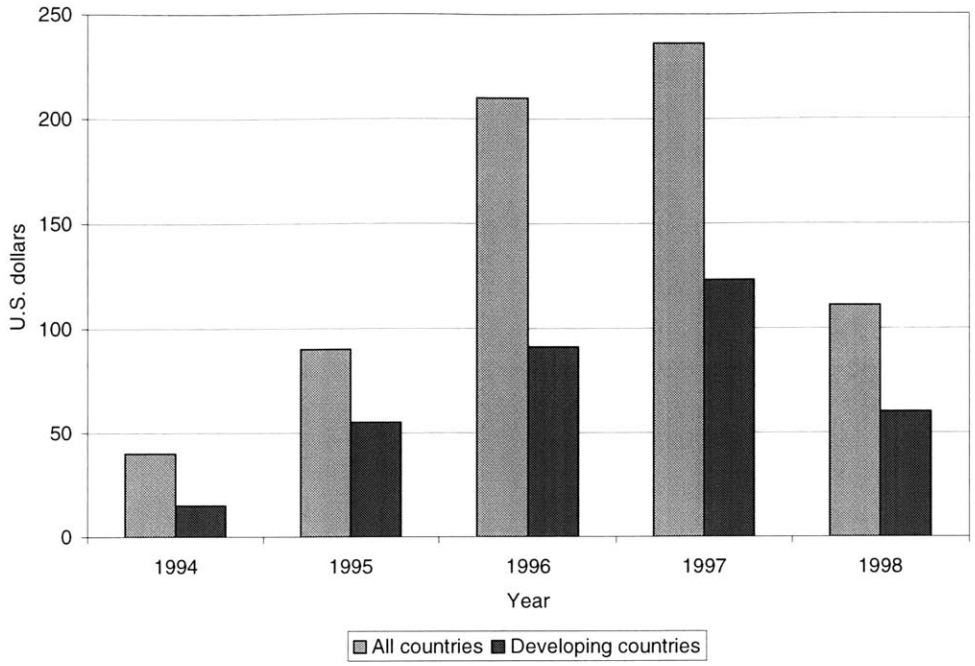

Fig. 1.2: Volume of project finance transactions, 1994-98 (Billions of U.S. dollars). Source: Capital DATA Project Finance Ware.

The volume of project finance transactions to developing countries, in terms of percentage of the volume of total project finance transactions, has increased from about 43% in 1996 to 54% in 1998 despite the significant reduction of the number of project finance transactions. As a result, it is now standard practice for large and complex projects in the major developing countries to use project finance as a technique to finance new economic investments. The volume of project finance transactions concluded in 1996 and 1997 before the financial crisis would have been hard to imagine a decade ago.

Project financing has not flowed to all countries and all geographic regions, just as all regions have not benefited equally from the dramatic increase in private international capital flows. Through 1997 the lion's share of project

finance volumes went to Asia (with about 34% of flows), although its relative share declined in 1997 and more significantly in 1998, as illustrated in Figure 1.3.

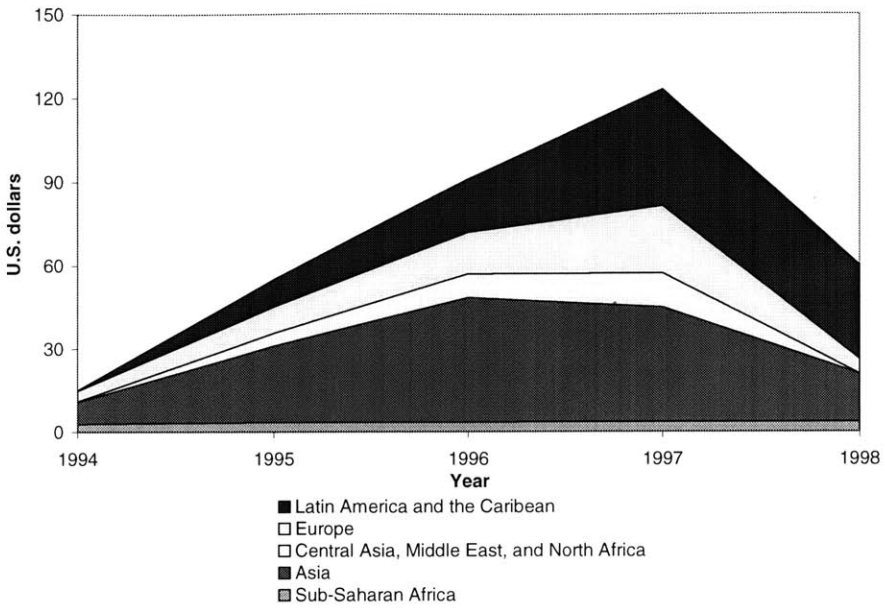

Fig. 1.3: Project finance transactions in developing markets, 1994-98 (Billions of U.S. dollars). Source: Capital DATA Project Finance Ware.

Between 1994 and 1998, Asia received 41% of the estimated flows to developing countries, followed by Latin America and the Caribbean with a share of 31%. Asia' dominance until mid-1997, and Latin America's since then (with about 56% of flows in 1998), was due to (1) high levels of domestic investment and growth, (2) macroeconomic stability, which increased the ability to attract long-term financing essential to project finance development, and (3) a regulatory framework relatively supportive of contract-based finance.

The sectorial distribution of project finance transactions in developing markets over the period 1994-98 is illustrated in Figure 1.4. The importance of infrastructure is clear, with 51% of flows over this period.

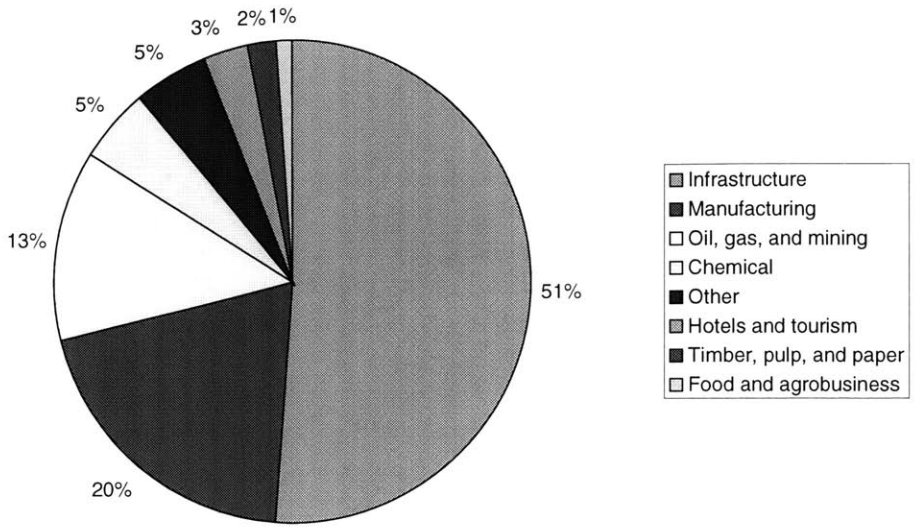

Fig. 1.4: Project finance transactions in developing countries by sector, 1994-98. Source: Capital DATA Project Finance Ware.

The financial and economic crisis that began in mid-1997 in East Asia and spread to other countries since then has dramatically slowed market evolution. The number of projects in developing markets fell in 1998 to 140 for an amount of $60 billion. The financial capacity and willingness of many banks in these countries and of other potential investors to support large projects have also been eroded. As a result, sponsors in crisis countries, both private and public, have canceled or deferred numerous major projects. Projects under implementation, which have been financed during the past few years, have come under increased stress in the face of reduced market demand for their output or related sponsor problems. With the prospects for economic growth slowing worldwide, sponsors in other countries are also structuring their projects more

conservatively. Yet, when the growth of new investments picks up again, project financing is likely to increase.

2 An Introduction to Project Finance

Infrastructure, oil and gas, telecommunication, water and other types of large projects are more and more being developed by private entities who rely on project finance as the most important financing technique available[2]. Indeed, project sponsors and host country governments do not necessarily have the creditworthiness to support new capital-intensive projects. Moreover, most of these governments are not prepared to devote the necessary financial resources for such projects. Additionally, project developers using the project finance technique are able to exclude debt financing of the project company from their own financial statements and avoid a downgrade of their credit rating. Consequently, project financing is increasingly used to finance the still growing need for infrastructure and other types of projects of both the developed and developing world.

2.1 A Historical Perspective

Project financing is a well-established financing technique and has a long history. Project financing can be traced back to the medieval times when in the

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[2] Buljevich, Esteban C. and Park, Yoon S., *Project Financing and the International Financial Markets*, Boston: Kluwer Academics Publishers, 1999.

12th century the British Crown negotiated with Frescobaldi, an Italian merchant bank, a loan for the development of the Devon silver mines on the basis of a production loan arrangement[3]. The loan contract provided the lender with the right to operate the mines for one year. During this year, the lender benefited from the cash flow generated by the project but had to cover all the operating expenses associated with the operation of the mines. On the other hand, the British Crown guaranteed neither the quantity nor the quality of silver that could be extracted from the mines during that period.

In the 19th century many infrastructure projects were financed using the project financing technique. In Argentina (1860) and in India (1880) the development of railways was principally financed by private entities whose investments took the form of project finance. In 1850 the project financing technique allowed the construction and the development of the Suez Canal. So, the funding for large-scale public works such as the building of roads, railways, and canals has come from private sources of capital throughout the 19th century.

The ownership and the management of infrastructures have gone through cycles in the last century. Railroads, irrigation, and supply of power, water, and gas were promoted, financed, and managed primarily by private-sector enterprises. With time, infrastructure companies were regulated and nationalized. Although the timing of public-sector involvement in infrastructure

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[3] Kensinger and Martin (1988) discuss this example and provide an interesting summary of the history of project financing.

development was not the same in the different countries, periods of war and economic recession triggered waves of nationalization in most countries. In the late 1950s, infrastructure services were largely provided by the public sector. The drop in the quality of these services, which was associated with the participation of the public sector, generated a wave of deregulation and privatization during the 1970s. The private-sector participation in the development of the infrastructures seems to be at the crest of this wave now.

2.2 Definition of Project Finance

Project financing[4] is a financing technique by which lenders agree to look initially to the projected revenues of a project and the assets given in collateral as the basis of their credit analysis and as the main source of repayment of their loans, independently of the credit standing of the project developers. In general, the term of "project finance" is used to refer to different kinds of financial structures, in which the debt financing is based primarily on the projected revenues from the operation of the project facility, and hence on the success of the project itself. In other words, project financing can be arranged when the project is capable of standing alone as an independent economic unit[5].

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[4] Nevitt, Peter K., *Project Financing: Fourth Edition*, London: Euromoney Publications, 1983.

[5] Finnerty, John D., *Project Financing: Asset-Based Financial Engineering*, New York: John Wiley & Sons, Inc., 1996.

Contrary to traditional corporate lending, project financing implies lending on the assumption that the project cash flow and the project's assets provide enough resources to repay debt financing. As a result, lenders, at least initially, do not expect the project sponsors to contribute to debt service payments with their own financial resources: "in true project financing, the project, its assets, its cash flow and the project contracts are segregated from the developers in such a way to permit the lenders to make their credit analysis of such project on an isolated basis[6]." Such credit analysis aims to determine the economic viability of the project. In other words, the lenders analyze the project to determine if it can be considered economically, technically, financially, and legally sound enough to generate adequate cash flows to meet the debt financing requirements.

According to Finnerty (1996), project financing typically includes the following basic features:

- An agreement by which financially responsible parties agree to complete the project and to make available to the project all funds required to achieve completion;
- An agreement by which financially responsible parties agree that, when project completion occurs and operation commences, the project will have sufficient cash to repay its debt service and operating expenses, even though the project fails to meet adequately performance requirements for any reasons;

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[6] Nevitt, Peter K., *Project Financing: Fourth Edition*, London: Euromoney Publications, 1983.

- Assurances by financially responsible parties that, in the event of operation disruption, the necessary funds will be available to restore the project to operating condition.

The critical distinguishing feature of a project financing is that the project is a distinct legal entity. As a result, project assets, project-related contracts, and project cash flow are segregated to a substantial degree from the project sponsors. Such a financing structure is designed to allocate financial returns and risks more efficiently than a conventional financing structure.

If lenders agree to look initially to project cash flow to make their credit analysis, such an analysis does not mean that all the risks associated with the project must be borne by the lenders. Most of these project risks need to be distributed and assumed by various creditworthy parties. Consequently, project financing does not imply that lenders assume all project risks. Actually, different credit support mechanisms are necessary to make a project bankable on a project finance basis.

According to Nevitt (1989), project financing implies the designing of the financing of a project with the least degree of recourse to the project sponsors as is possible, while at the same time securing enough credit enhancement from such sponsors or any other interested third party, in a way that the lenders would not assume a significant exposure to project risks. Finally, project financing consists of distributing the different risks associated with a project to the various participants who have a particular interest in the success of the project. This

distribution has to be done in such a way that each participant assumes a portion of project risks that it is best able to manage. No precise procedure exists to identify, evaluate, distribute, and neutralize project risks. That is why project financing is a risky business.

2.3 Reasons for Private-sector Participation

There are several reasons for the private-sector participation of infrastructure development[7]. For example, in the emerging economies of Asia, the main reason for including the private-sector in infrastructure development is the scarcity of governmental resources to finance the infrastructure needs that support economic growth. In Latin America, the reasons for private-sector participation also include reduction of the impact on public finances of utility company deficits, political pressure from society due to low quality and poor coverage of services, and the need for funds to finance economic development programs and to meet social requirements. In this region, some countries have completed the first stage of including private-sector participation in the development of the infrastructures. For these countries, the reasons of continuous private-sector participation include the creation of investment opportunities for the private sector, the inflow of capital and imported

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[7] This section is based on Vives, Antonio, "Private Infrastructure: Ten Commandments for Sustainability," *The Journal of Project Finance*, Spring 1997.

technologies, and the development of capital markets, which have become more efficient.

For developed countries, the main motivation appears to be reduction in the cost of services and enhancement to technologies through competition between private-sector suppliers. In certain cases, such as Spain and other European countries, the need to meet the goals of the Maastricht Treaty (public-sector deficit reduction) requires the reduction of public investment without jeopardizing economic growth.

2.4 Uses of Project Finance

The project financing technique has been extensively used for infrastructure developments in many parts of the globe. In emerging markets, where the needs for communication, transportation, housing, water, waste treatment, and power generation are still growing, project finance provides a financing scheme for important development. In countries moving from centralized to market-based economies, project finance provides the necessary financing to maintain, upgrade, and replace existing infrastructure assets. Nevertheless, the use of project finance has not been restricted to infrastructure investments in developing countries. Indeed, over 45% of the number of project

finance transactions worldwide reported in 1997 took place in Europe (33%) and in North America (12%)[8].

Projects financed using this technique tend to be large in scale, requiring extensive capital. There are two reasons explaining this trend. First, economies of scale can be achieved in both development and operation of the project facility. Second, the massive needs for infrastructure development are to be met by developing very large projects.

Project financing has long been used to fund large-scale natural resource projects, such as Coso Geothermal Project (United States), Hamersley Iron Ore Project (Australia), or Reserve Mining Project (United States). One of the more notable of these projects is the Trans Alaska Pipeline System (TAPS) Project, which was developed between 1969 and 1977. TAPS[9] was a joint venture of eight of the world's largest oil companies. This project involved the construction of an 800-mile pipeline, at a cost of $7.7 billion, to transport crude oil and natural gas liquids from the North Slope of Alaska to the port of Valdez in Southern Alaska. TAPS involved a greater capital commitment than all the other pipelines previously built in the continental United States combined. This project is notable by its huge capital investment and the technical challenges caused by the stringent environmental conditions encountered.

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[8] Source: Capital DATA Project Finance Ware.

[9] Finnerty, John D., *Project Financing: Asset-Based Financial Engineering*, New York: John Wiley & Sons, Inc., 1996.

More recently, in 1988, five major oil and gas companies formed Hibernia Oil Field Partners to develop a major oil field off the coast of Newfoundland. This project involved $4.1 billion of development costs. Crude oil production commenced in November 1997, and peak production, originally forecasted to average 135,000 barrels per day, is now expected to hit 180,000 barrels per day in 2000. The project was too large and too risky for any of the sponsors to undertake on its own. The financial support of the Canada Federal Government and Newfoundland Provincial Government was crucial to launching the project. This project is a good example of using a public-private partnership to finance a large project.

In the United States, the passage of the Public Utility Regulatory Power Act (PURPA) in 1978 provided a major stimulus to the use of project finance. Under PURPA, local electric utility companies are required to purchase all the electric output from any independent power producers under long-term contracts. This provision of PURPA encouraged the formation of stand-alone power producers able to borrow large sums on the basis of the long-term power purchase agreements they had entered into with electric utility companies. These long-term contractual obligations were sufficiently sound to support nonrecourse project financing. As a result, the growth of the independent power industry in the United States can be attributed directly to passage of PURPA. Such projects did not directly involve the public-sector participation, but encouraged the development of private-sector initiatives.

In the United Kingdom, by contrast, the government has been directly involved in a growing of infrastructure projects since it announced in 1992 the establishment of the Private Finance Initiative (PFI). The PFI was designed to involve the private sector in the financing and the management of infrastructure and other projects. Project finance has been used principally for transportation projects, such as the £320 million rail link to Heathrow airport, the £2.7 billion Channel Tunnel Rail Link, and a £250 million project to build and operate a new air traffic control center in Scotland. The scope of the PFI is not restricted to transportation projects and the government has broadened its use to the construction and the maintenance of prisons and hospitals.

Project financing for manufacturing facilities is another area in which project financing has recently begun to develop.

2.5 Limited-recourse Project Finance Structures

According to Hoffman (1989), the term "project financing" is generally used to refer to a nonrecourse or a limited-recourse financing structure in which debt, equity, and credit enhancement are combined for the construction and operation of a particular facility in a capital-intensive industry.

In a project financing nonrecourse structure, lenders base credit appraisals on the projected revenues from the operation of the project, independently of the credit of the project sponsor. Because the project debt is nonrecourse against the project sponsor's assets, the project sponsor has no

direct legal obligation to repay the project debt or make interest payments if the project fails to service its debt. As a result, lenders who lend to the project company on a nonrecourse basis are very cautious about ways of the project company entering into contract with the other project participants. Indeed, the project contracts form the framework for project success and debt repayment.

The nonrecourse project financing technique, which results in no liability to the project sponsor for the project debt, is rarely encountered. In most project finance transactions, lenders require that assurances be put in place to arrange sufficient credit support for project debt securities. This is accomplished through contractual obligations provided by the project sponsors or other creditworthy parties involved with the project. Such contractual arrangements generally provide lenders with assurances that (1) the project will be completed even if costs exceed those originally projected, (2) the project will generate sufficient cash flow to meet all its debt service obligations, and (3) the project will continue to service its debt obligations even if the project's operations are interrupted or terminated for any reason. That financing structure is called limited-recourse project financing. So, this technique is mainly characterized by allowing lenders to impose obligations on the project sponsor to guarantee the repayment of the project debt if the project revenues are insufficient to cover principal and interest payments. This method has been used in recent years to finance major capital-intensive projects. Limited-recourse financing techniques include various structures, such as BOT (Build Operate Transfer), BOO (Build Own Operate), BOOT (Build Own Operate Transfer) and leasing transactions.

2.6 Advantages and Disadvantages of Project Financing

Project financing is often used by established, well-capitalized companies that want to undertake projects required large debt commitments with a minimum of risk. Project sponsors rely on project financing to develop projects in different geographic areas because primarily each project is based on its own projected cash flow that is independent of the financial obligations of the other projects and required minimal equity contributions. There are others factors that explain the attractiveness of project finance as a technique to finance large capital-intensive projects around the world.

According to Buljevich and Park (1999), project financing is usually chosen by project sponsors in order to:

- Eliminate or reduce the lender's recourse to the project sponsors;
- Permit an off-balance sheet treatment of the project debt financing;
- Maximize the leverage of debt avoiding dilution of existing equity;
- Avoid any restrictive covenants in other securities arrangements that would otherwise preclude project development;
- Avoid any negative impact of a project on the credit standing of the project sponsors;
- Obtain better financial conditions when the credit risk of the project is better than the credit standing of the project sponsors;
- Allow the lenders to appraise the project on a segregated and stand-alone basis;

- Obtain better tax treatment for the benefit of the project, the sponsors or both;
- Reduce political risks affecting the project.

Another reason for choosing the project finance technique is that it also eliminates agency costs. Some of these reasons are discussed in more detail below.

Nonrecourse or Limited-recourse Financing:

Limited liability is usually the main reason for project developers for undertaking a project finance transaction. Indeed, such a financing structure allows project sponsors to limit, or remove in case of nonrecourse structure, their obligations to the debt financing of the project company if the revenue generated by the project is not sufficient to cover principal and interest payments.

Off-balance Sheet Treatment:

The off-balance sheet treatment of the project liabilities is another important advantage of project financing. In a project financing, the debt of a project is only included on the financial statements of the project company, and therefore does not affect the sponsor's financial performance. However, in order to benefit from an off-balance sheet treatment, none of the sponsors has to control the project company. Control means ordinarily to own more than a 50%

participation in the capital of the project company. Exact accounting treatment of debt financing of the project company is presented in more detail in Chapter 3.

Highly-leveraged Debt Financing:

Another advantage of project financing is that it permits to finance a project using highly-leveraged debt reducing the amount of equity necessary for financing the project. Debt-to-equity ratios in project finance structures vary from project to project, but 70% or more are commonly accepted. However, lenders generally require that the sponsors contribute a reasonable amount of equity to the project company to ensure appropriate project sponsors' dedication to the project success. The more equity contributed by the project sponsors, the less temptation of abandoning the project prematurely.

Avoidance of Restrictive Covenants:

A fourth reason for selecting a project financing is that the structure permits the project sponsors to undertake new capital-intensive investments avoiding restrictive covenants. These restrictive covenants may consist of restrictions on issuing new debt securities, limitations on new capital expenditure or on participation in new ventures, and restrictions based on certain financial ratios, such as interest coverage ratio, liquidity ratios and debt-to-equity ratio. The distinct nature of the project financed permits the project sponsors to leverage debt to an extent that may be prohibited under existing arrangements. Similarly, existing covenants do not typically reach to the project financing.

Project Isolation:

By means of a project financing structure, the credit standing of the sponsors is not affected by the financial risks associated with the development of a project. Consequently, the project sponsors may undertake large and highly risky projects without deteriorating their overall credit standing. Moreover, the risk allocation in a project finance transaction allows project sponsors to assume limited risks knowing that the failure of one of those projects will not cause their bankruptcy. On the other hand, the credit risk of a project may be sometimes better than the one of its sponsors resulting in more favorable interest rates and lower credit enhancement costs.

Isolation of a project also has benefits for lenders. It permits lenders to appraise a project on a stand-alone basis and to control project's operations on an isolated basis without having to take into account the overall project sponsors' assets.

Tax Treatment:

The determination of the best form of business organization for a project finance transaction is generally based on the idea of maximizing the tax benefits for the project company, the sponsors or both. In fact, the type of legal structure selected to form the project company may affect not only the tax treatment of the project in the host country, but also the tax treatment of the sponsors and lenders in their respective countries. Tax treatment is deeply discussed in Chapter 3 for the most common forms of business organization used to structure a project finance transaction.

Political Risk Diversification:

Political risk associated with the development and operation of a project may be reduced by the involvement of various participants. Indeed, the host country government could be reluctant to take action against the project since it knows that it will have to face pressure not only from the project sponsors but also from various project participants, such as multilateral agencies.

Project financing also has disadvantages. According to Hoffman (1998), project financing presents several disadvantages, such as, among others:

- Long and complex structuring process and risk allocation;
- High degree of risk for lenders;
- Higher financial costs than conventional financing;
- Greater lender supervision on management and operation of the project;
- Expensive insurance coverage.

Project finance transactions are complex transactions involving many participants with diverse interests. The identification and allocation of project risks, which must be allocated carefully among project participants, result in long negotiations and increased transaction costs. Moreover, the complexity of this risk allocation process, which is a critical step for project success, may be perceived as a high entry barrier in the project finance world.

The project financing structure also increases the degree of risk for the lender since its recourse to the project sponsors is limited in case of default of the project company to repay its debt. As a result, interest rates may be higher than those ordinarily made directly to the project sponsors. However, this is not always true because interest rates vary with market conditions.
Another disadvantage of project financing is the greater supervision lenders will exercise on the management and operation of the project. Such supervision results in higher costs that are typically borne by the project sponsors.

Nevertheless, many project developers have chosen the project finance technique as it has often provided more flexibility to make large capital-intensive projects successful.

3 Project Finance Ownership Structures

3.1 Project Finance Participants, Their Roles and Objectives

There are numerous parties involved in a typical project finance transaction. Besides the project company and the lenders, these parties generally include one or more project sponsors, suppliers, output purchasers, one or more construction companies, one operator, and a host government. These parties have different roles and objectives that may not be compatible.

3.1.1 Project Company

The project company is the entity that will own, develop, construct, operate, and maintain the project. The determination of the best type of ownership structure to undertake the project is usually dependent upon a myriad of factors, such as proportion of debt and equity investments, tax and accounting considerations, and legal and regulatory issues. The local law of the country in which the project takes place is one of the major concerns in the selection of the form of organization for the project company. For example, the local law can prescribe a certain form of organization, prevent the project company from owning real property in the host country, or require local investor participation in

the project company. The selection of the appropriate ownership structure for the project (*e.g.*, corporation, general partnership, limited partnership, joint venture, limited-liability company, trust, etc.) is an important step in project development. Some of the most frequently forms of business organization chosen to undertake a project are discussed in more detail in this chapter.

3.1.2 Project Sponsors

The project sponsor generally consists of one or more corporations that have special interests in the development of the project. Typically, project sponsors are involved in either the construction or the management of the project or both. Buljevich and Park (1999) provided a list of potential project sponsors, which may consist of:

- A company interested in the construction and procurement of the project facilities;
- A company interested in the operation of the project facilities;
- A supplier of raw materials, fuel, or other inputs to the project;
- A purchaser of the project outputs;
- Passive institutional investors willing to make a capital investment offering an acceptable rate of return;
- Financial institutions interested in being appointed as financial advisors for the project and in structuring its debt financing.

In most cases, the equity of the project company is owned by the project sponsors or by special-purpose corporate subsidiaries of each of them, which act as a link between the respective sponsor and the project company. In some cases, project sponsors may jointly create a special-purpose entity designated to hold all the equity of the project company for purposes of making the sponsors' relationships with the project company easier and for bringing more flexibility for the entry of new equity investors in the project.

Other equity-holders may be companies with commercial ties to the project, such as suppliers and project output purchasers, institutional investors, or financial institutions. For example, in infrastructure project finance, the main shareholder of the project company typically is the main constructor of the project facility. Sometimes, the equity ownership of the project company include partners from the country in which the project is located as a way of providing local management and also as a way of reducing political risks by easing the relations with the host government. In certain strategic areas, such as natural resources and public services, local partners can be imposed by law.

When entering into project financing, the project sponsor seeks to reach several objectives at once. The project sponsor primarily wants to undertake the project "off-balance sheet" so that the project will not impact its overall credit performance and its leverage. The project sponsor also looks at making a good return on its investment in the project, and consequently seeks to retain control of the project as long as possible to protect its investment and ensure its

profitability. The project sponsor often cannot carry all the risk itself, and therefore seeks to share the risk with the other project participants.

3.1.3 Commercial Lenders

Commercial lenders, including banks, insurance companies, credit corporations, provide debt financing for the project. These institutions may be based in the host country or in another country. Sometimes, the lenders are strategically selected from a range of countries. The purpose of this syndicate diversity is to discourage the host government from taking actions against the project, such as expropriation or changes in law. If the host government acted against the interests of the project, it could bear economic consequences from the home country of each lender. Sometimes the lending group includes lenders from the host country to protect sponsors' interests. This association with lenders in the host country tends to prevent the host government from penalizing the project company. If the host government acted against the project, the project company could not pay its debt service, and therefore local lenders could lose their investments in the project. This consequence may be strong enough to restrain the host government from discriminatory against the project.
The lenders may provide different types of debt to the project. These different instruments for debt financing can be divided into either senior debt or subordinated debt. The subordinated debt typically is junior in liquidation and current payment to the senior debt but ranks senior to the equity and, therefore

principal and interest on subordinated debt are payable before dividend payments. Senior debt financing typically is provided by commercial lenders. Lenders generally are organized in syndicate to provide debt financing for intensive-capital project investments. In this case, this association of several lenders is the unique way of providing the project with the amount of debt required. This situation is typical for infrastructure projects that involve substantial investments. Furthermore, any one lender does not have the capacity to provide the entire project loan and wants to limit its exposure to financial risk.

3.1.4 Multilateral Agencies

The World Bank, the International Finance Corporation, regional development banks and other international agencies provide significant credit support for project finance transactions in developing countries. For example, the role of the International Finance Corporation[10] (IFC) is to promote growth in the developing world by financing private sector investments and providing technical assistance and advice to governments and businesses. In partnership with private investors, IFC provides both loan and equity finance for business ventures in developing countries.

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[10] The IFC official mission statement can be found at http://www.worldbank.org.

The role of multilateral agencies is multiple but seeks mainly to support economic growth in developing countries by providing to private investors funds required to complete the financing and an insurance against political risk.

3.1.5 Suppliers

Once the project facility has been built and has become operational, the project company will need to purchase the supplies necessary for the start-up and operation of the project. Consequently, the project company enters with one or more suppliers into long-term supply agreements for the provision of such supplies. The suppliers may provide a broad type of supplies, such as raw materials, gas, coal, fuel or other inputs to the project. Supply agreements provide certainty in respect of the availability and the price of key supplies required to produce and deliver the project outputs. Because of the importance of inputs to the project, the project sponsors and the lenders are concerned with the economic terms of the supply agreements and the ability of the suppliers to provide the supplies necessary to the project in accordance with these agreements.

A supplier of the project's inputs is interested in obtaining a long-term agreement at the highest possible price with the project company.

3.1.6 Output Purchasers

In most capital-intensive projects, the project company usually enters with a governmental entity or a private-sector company (the "off-taker") into a long-term sale and purchase contract in respect of the project outputs. The off-taker or output purchaser is the purchaser of all or at least some of the products or services produced by the project. The off-taker agrees to buy from the project company a certain quantity and quality of project output, for a certain period of time and at certain pre-established prices.

In most nonrecourse and limited recourse project finance transactions, the off-take purchaser provides the credit support for the underlying financing. Indeed, an off-take agreement provides certainty that a project will generate sufficient cash flow to service its debt and operating costs since the off-taker purchaser commits itself to buy from the project company a certain quantity of project output, for a certain period of time and at certain arranged prices.

3.1.7 Contractor

The contractor is the entity responsible for the construction phase of the project. The design, engineering, construction, and the procurement of the project facility are usually contracted by the project company with the contractor. The contractor generally undertakes to build and deliver the project facility on a turnkey contract basis. The terms of such a contract impel the contractor to

complete the project facility at a certain pre-determined fixed prices, by a certain date, and in accordance with certain specifications and performance warranties. Consequently, a turnkey construction contract typically provides engineering, procurement, and construction services to complete the project facility and deliver it to the project company in order to start the project's operation.

3.1.8 Operator

The operator is the entity responsible for the operation, maintenance, management, and repair of the project. Most of the time, the project company delegates the operation, maintenance, and management of the project to a third party under the terms of an operating and maintenance agreement. Outsourcing is a way for the project sponsors, who do not have the necessary competencies to operate the project facility, to ensure that the project will be operated, managed, and maintained according to operating industry practices. Such a way of operating a project facility also enables the project sponsors to use their own resources to develop projects related more closely to their own businesses, without precluding their chances to undertake profitable projects. In other cases, it is the owners of the project company who fill the operator's role.

3.1.9 Host Government

The host government is the government of the country in which the project is located. As such, the host government typically issues permits, licenses, authorizations and concessions to the project company.

In some projects, the host government is one of the owners of the project or will become the owner of the project at the end of the concession period, such as in a build-operate-transfer (BOT) structure. In others, the project company retains ownership of the project's assets as it is the case in a build-own-operate (BOO) structure.

The host government typically provides the project company with a concession for the construction and operation of the project. Its role can be extended to others domains. In some project finance transactions, the host government might be the borrower. The host government might also be involved as an off-take purchaser or as a supplier of raw materials or energetic resources.

In general, the host government may have one or more objectives in cooperating in a project's development. Hoffman (1998) suggested the following ones:

- Obtain a quick and efficient development of needed infrastructure provided by the project;
- Promote economic development;
- Satisfy multilateral agencies of its development success and economic growth;
- Insure a proper, safe, and efficient operation of the project;

- Minimize use of its own fund or credit for economic growth;
- Obtain project ownership after private participants receive an agreed equity return;
- Take control of the project if it is inefficiently operated;
- Limit restrictions on its ability to enact new laws and promulgate new rules.

3.2 Project Finance Participants Structure

Figure 3.1 summarizes a typical project financing structure with some of the major participants involved in a project finance transaction.

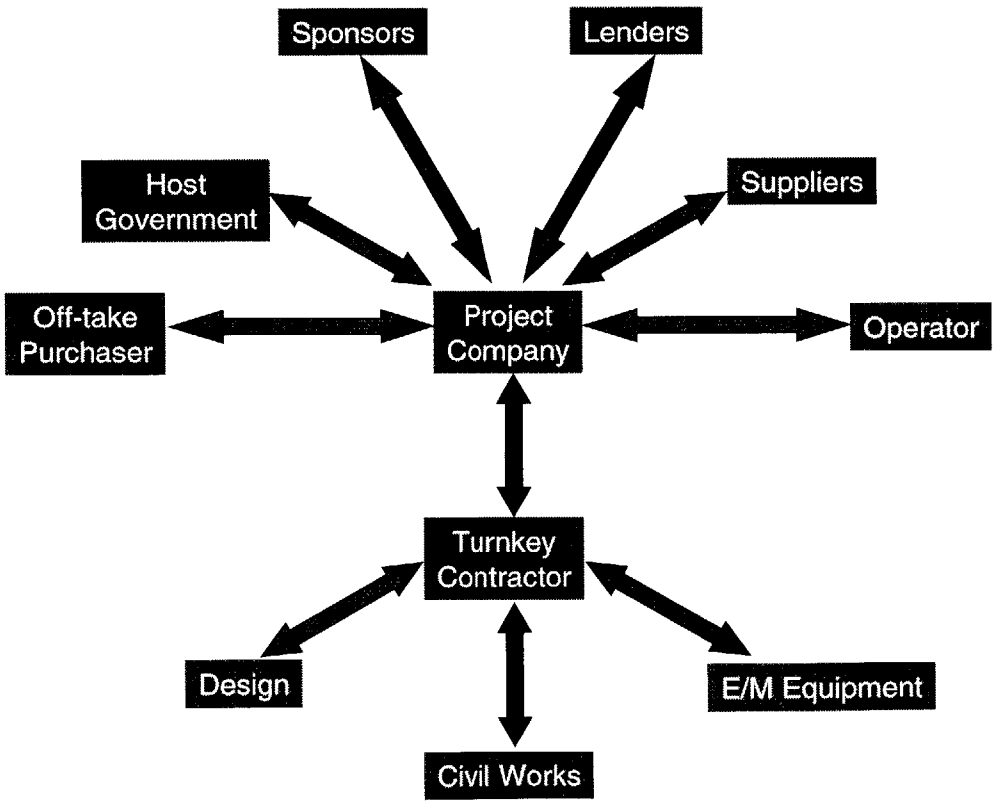

Fig. 3.1: Project Finance Participants.

3.3 Selection of the Project Finance Ownership Structure

Selection of the form of business organization for the project company is an important step in project development. The type of form of organization selected by the project sponsors can have significant impacts on project development and on its financing. For example, transfer of the ownership of the project can be prohibited in some jurisdictions. Therefore, the project company, independently of its form of organization, should be organized in the early stages of the project developments to avoid these kinds of concerns.

The appropriate ownership structure for a project depends on a variety of business, legal, accounting, tax, and regulatory factors. According to Finnerty (1996), the following factors have to be considered in selecting the form of business organization for the project company:

- The number of participants and the business objectives of each;
- The project's cost of capital and the anticipated earnings pattern of the project;
- The requirements of the regulatory framework;
- The existing debt instruments and the tax positions of the participants;
- The political jurisdiction in which the project is located.

The last factor raises the important question of where the project company has to be organized. The project company could be organized either under the

laws of the host country or under the laws of the project sponsors' countries. As a result, the project sponsors have to determine the advantages and disadvantages of each country's laws and the tax treatment of the project company in each country.

3.3.1 Basic Forms of Project Finance Ownership Structures

While most companies prefer absolute ownership and control of projects they undertake, the formation of jointly owned projects is sometimes a solution that has to be considered for certain projects that are beyond a single company's financial and management resources. Indeed, a number of factors can render such a jointly structure attractive, such as:

- The risks of the project are shared;
- The sponsor can benefit from an off-balance sheet financing by using the project company as the borrowing entity, and in some cases from tax deductions;
- A greater debt leverage can be obtained.

There are basically four forms of business organization for jointly owned projects: (1) corporations, (2) general partnerships, (3) limited partnerships, and

(4) joint ventures. This section[11] presents the forms of business organization most frequently selected for undertaking a project. For each of the basic forms of organization recorded, a financial analysis is presented through accounting and tax considerations, and the reasons for selection are exposed.

3.3.2 Corporation

A corporation is probably the most common form of business organization selected for structuring a project financing transaction. In this ownership structure, the project sponsors incorporate an entity to develop, construct, own, operate, and maintain the project. This corporation, which is frequently wholly owned by the project sponsors, raises funds through the sponsors' equity contributions and through the sale of debt securities directly issued by the corporation. The corporation borrows on the basis of its own credit. Debt securities issued by the corporation can take the form of either senior debt or subordinated debt, including preferred stock or convertible securities.

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[11] This section is based on Finnerty, John D., *Project Financing: Asset-Based Financial Engineering*, New York: John Wiley & Sons, Inc., 1996, Chapter 5 and Nevitt, Peter K., *Project Financing: Fourth Edition*, London: Euromoney Publications, 1983, Chapter 8.

Accounting Considerations:

The impact a project has on the financial statements of a project sponsor depends principally on its percentage of ownership of the project corporation. Accounting rules in the Unites States[12] require line-by-line consolidation of assets and liabilities for financial accounting purposes if an entity controls another entity. Control normally means ownership of more than a 50% voting interest. As a result, if a sponsor owns more than 50% of project equity, full consolidation is required. In that situation, the sponsor must consolidate the project's financial statements on a line-by-line basis. Such consolidation on a line-by-line basis can adversely affect the financial performance of the sponsor. Typically, the debt-to-equity ratio will increase, and therefore the coverage interest ratio[13] will fall down eroding the project sponsor's ability to meet its annual debt payments. Consequently, the financial burden the project sponsor has to face increases. On the other hand, ownership of 50% or less of a project corporation is generally insufficient to achieve control of the project corporation, and in such case the project sponsor can employ the "equity method" of accounting. Under equity accounting, a sponsor carries ownership interest in the project on its own balance sheet as an investment, and reports its proportionate share of project income or loss. Project assets and liabilities in that case are not included on the project sponsor's balance sheet, and only a one-line entry is required on the

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[12] Accounting rules referred to Accounting Research Bulletin No. 51 (ARB 51) and Accounting Principles Board Opinion No. 18 (APB 18).

[13] This ratio compares income available for debt service to annual interest obligation.

profit and loss statement. In that case, the performance ratios of the project sponsor are preserved.

If a project sponsor owns less than 20% of project equity, no disclosure is generally required by law. Nevertheless, the project sponsor normally has to disclose in a footnote any contingent liabilities with respect to the project. The project sponsor will normally account for its investment in the project corporation under the "cost method." Under this method, the equity contribution is carried as an investment at original costs, and the sponsor reports project income only to the extent it received dividends from the project corporation. Project assets and liabilities are not included on the sponsor's balance sheet. Table 3.1 summarizes project sponsors' accounting treatment for equity investment.

	Sponsor Percentage Ownership of Project Corporation		
	0% - 20%	20% - 50%	50% - 100%
Project Sponsors' Accounting Treatment for Equity Investment	❑ "cost method" is generally used ❑ project assets and liabilities are not included on the project sponsors' balance sheet ❑ only dividends from the project corporation are reported	❑ "equity method" is generally used ❑ project assets and liabilities are not included on the project sponsors' balance sheet ❑ a one-line entry is required on the profit and loss statement	❑ Full consolidation is required on a line-by-line basis

Table 3.1: Accounting considerations relative to percentage ownership of project corporation.

Tax Considerations:

A project corporation is considered as a separate taxable entity and files its own income tax return. Assuming that no single participant owns sufficient equity to consolidate the project on its own financial statements, the tax benefits

of ownership arising out of the project, such as investments tax credit, depreciation and interest deductions are available to the project corporation. Only the project corporation is entitled to benefit from these tax deductions. Nevertheless, such tax benefits are deferred if the project corporation has operating losses. These deductions must be carried forward for many years until the project corporation is taxable.

As mentioned earlier, the project corporation is recognized as a taxable entity. As a result, the project's income is exposed to two levels of taxation, in the absence of consolidation. The "double taxation" of the project earnings occurs when the project corporation pays dividends since the dividends received from the project corporation are subject to income taxes at each sponsor's applicable income tax rate.

A typical jointly owned project corporation structure is illustrated in Figure 3.2.

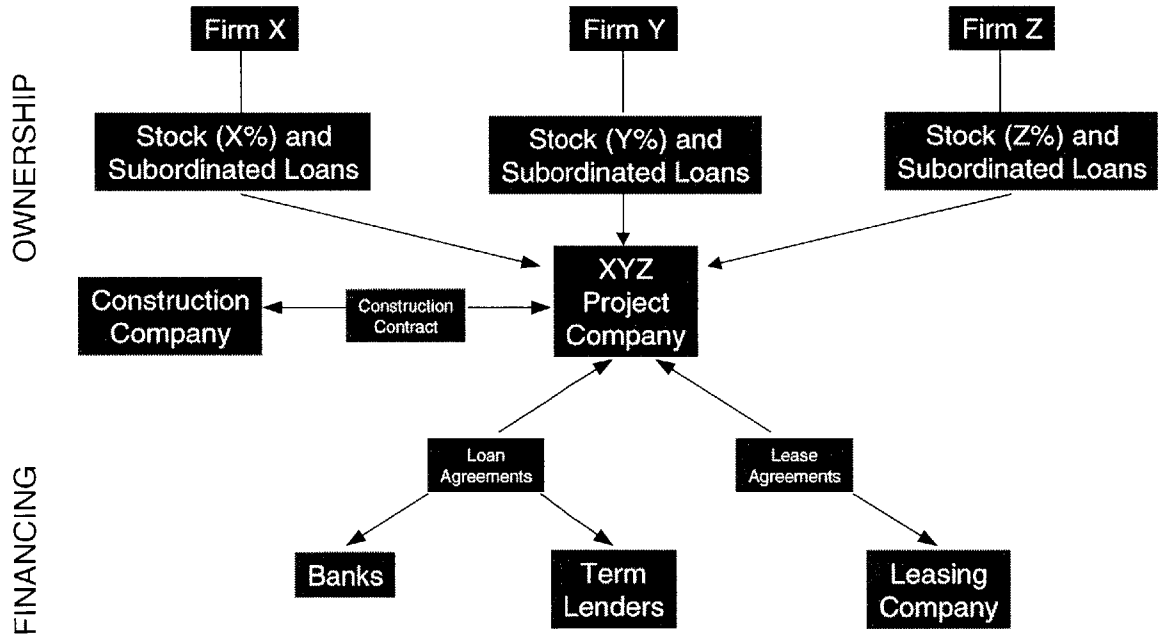

Fig. 3.2: Ownership Structure when a project is organized as a Corporation jointly owned by several project sponsors. Adapted from Nevitt, Peter K.

Advantages:

The corporate form of organization offers the advantages of limited liability and the benefits associated with the creation of a separate legal entity.
The formation of a new entity to undertake a project allows the owners of the project corporation to enjoy limited liability for the actions of the corporation. However, a loss of this liability protection, called a piercing of corporate veil, can occur where the corporate identity of the special-purpose subsidiary created by the project sponsors for purpose of undertaking the project is disregarded. To avoid the piercing doctrine to be applied in a project financing, the subsidiary should (1) have a valid business purpose in close relation to the development of the project, (2) be managed by representatives of the corporation rather than those of the parent company, and (3) be identified as the contracting party. Beyond the limited liability, which insulates the project sponsors from all the obligations of the corporation, the advantages related to the fact that the project corporation is recognized as a separate legal and taxable entity are as many reasons for adopting the corporate form of structure to organize the project. These advantages for the project sponsors are the following ones:

- Debt of the project corporation is off-balance sheet for the project sponsors if they own less than 50% of the project ownership;
- Project sponsors' performance ratios are not directly affected, hence their ability to raise funds for other projects is preserved;
- Project sponsors' loan covenants are not affected;
- Capital is preserved for undertaking other investments;

- Loans are non-recourse to the project sponsors.

Disadvantages:

Nevertheless, the corporate form of organization has some disadvantages that the project sponsors must take into account. The project sponsors usually do not receive immediate tax deductions from any investment tax credit the project corporation can claim or from possible operating losses of the project. On the other hand, the ability of a project sponsor to invest in the project corporation may be limited by provisions contained in loan agreements which may restrict permitted investments. Finally, the borrowing cost could be higher since the debt leverage of the project corporation may be greater than that of the project sponsor.

3.3.3 General Partnership

The partnership form of organization is frequently used in structuring joint venture projects. Each sponsor, either directly or through a wholly owned subsidiary, becomes a partner in a partnership that is formed to own and operate the project. Under the terms of a partnership agreement, all partners agree to share proportionately in management and income of the project undertaken. The partnership can enter into financing arrangements in its own name. As a result, the partnership issues securities, either directly or through a corporate borrowing vehicle, to arrange the financing of the project.

A partnership form of organization is particularly attractive for projects in which project sponsors agree to take the project's output in proportion to their share ownership as a direct source of revenue. Such projects are called "cost companies." In that case, the Internal Revenue Code authorizes to pass through tax benefits of ownership to the project sponsors. Costs companies have been extensively used in mining projects.

General partners generally are jointly and severally responsible for all obligations of the partnership. These liabilities include contracts, debt, and tort liabilities. Potential tort liabilities can usually be covered by insurance. In theory, the extent of a general partner's potential liability could exceed its reported balance sheet liabilities if one of the general partners were to act improperly. Limited partnerships, which are described below, avoid this liability problem. The exposure of the project sponsors to project liability, however, can be reduced in different ways. Partners can protect themselves to some extent by forming subsidiaries to enter into a partnership agreement to operate a joint venture project. However, there is some risk associated with this solution. A court might, in the future, "pierce the corporate veil" and impose liability on the parent company. Nevertheless, this risk can be mitigated if the corporate subsidiary has a valid business purpose related to the project. Further steps can be taken to protect project sponsors who wish to operate a project as a general partnership. One such step is to limit lender recourse to the assets of the partnership and require lenders to waive rights against the assets of each partner. Lenders will accept such arrangements with the partners only if the assets of the partnership

are strong enough to support the transaction. Such assets may include, for example, an unconditional take-or-pay contract. Indeed, such a contract, which gives the owner assurance that it will have sufficient cash flow to meet operating expenses and debt service, provides lenders with strong credit support. Another step is agreements among the partners not to enter into loan agreements without the consent of all partners.

Generally, the partners establish a separate project corporate entity, which is owned by the partnership, to issue securities. This separate entity, created for purpose of arranging the financing of the project, is known as a corporate financing vehicle. In that borrowing structure, a partnership issues notes to the corporate financing vehicle which, in turn, issues notes to project lenders. The terms of the notes issued by the partnership are identical in interest rate and maturities to those issued by the corporate financing vehicle. The terms of the partnership notes normally preclude recourse to the general credit of the partners. As a result, project lenders look solely to the projected revenues of the project as the main source of repayment of their loans.

Accounting Considerations:

Financial accounting for partners in reporting liabilities of partnership follows the same rules as for corporation providing that recourse for partnership liabilities is limited to partnership assets. If a partner owns more than 50% of partnership equity, full consolidation is normally required on a line-by-line basis. Less than 50% of partnership equity but more than 20% generally requires only a

one-line entry of the partners' investment. Each partner normally accounts for its equity investment under the equity method. As a result, each partner reports in its own income statement its pro rata share of project income or loss. Project assets and liabilities are not included on its balance sheet.

Tax Considerations:

A partnership is not a separate taxable entity, does not pay income tax, and files a partnership income tax return, which reports the revenues, deductions, and credits attributable to the partnership. Unlike a corporation, the net income or loss of the partnership is passed through to the partners. Each partner does not reflect project assets and liabilities on its balance sheet but includes in its own tax return its proportionate share of partnership income or loss. Thus, each partner benefits from tax deductions, operating expenses, investment tax credit, and interest deductions. The use of a wholly owned corporate subsidiary to serve as one of the general partners does not preclude the project sponsor to claim these tax deductions as long as the subsidiary is consolidated for income tax purposes. Nevertheless, a partner may deduct partnership losses only to the extent of its tax basis in its investment in the partnership.

If the partnership structure is selected, care must be taken that, in limiting the functions of the partnership, the resulting entity for tax purposes does not have

too many corporate characteristics. Generally[14], two of the following four attributes must be present for a partnership form of organization to be characterized as an association, which is taxed as a corporation: unlimited life, centralized management, free transferability of ownership, limited liability for all owners. Normally, it is possible to form a partnership that will be not characterized as an association, even if protective steps are taken to limit the exposure of the partners' liability, by avoiding free transferability and continuity of life.

Figures 3.3 and 3.4 show partnership ownership structures when a project is organized with or without using a corporate financing vehicle.

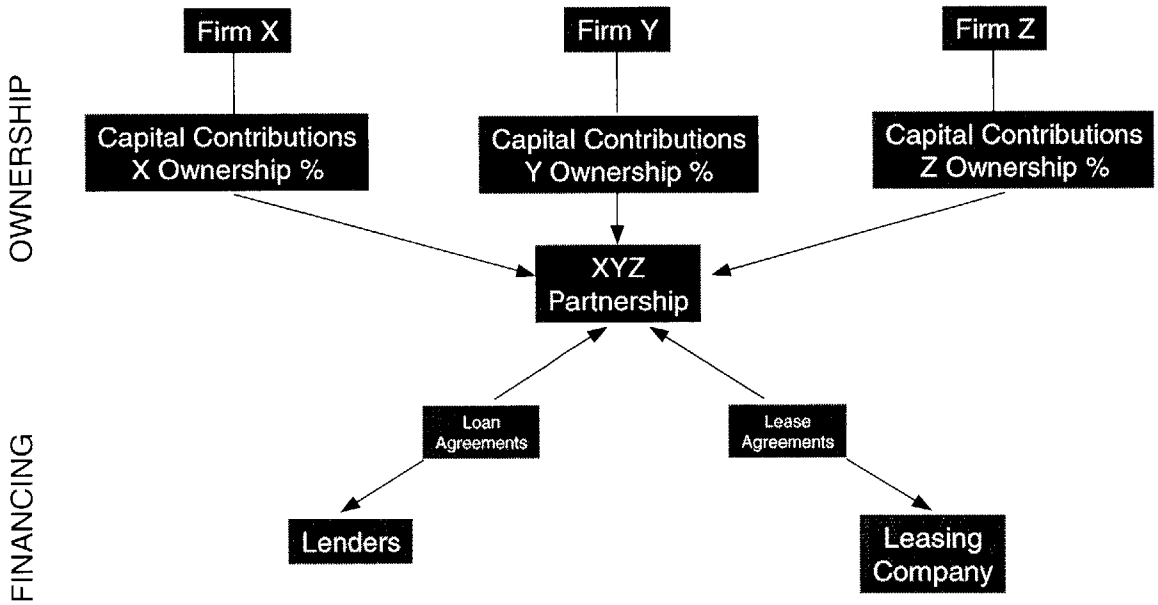

Fig. 3.3: Ownership Structure when a project is organized as a General Partnership. Adapted from Nevitt.

[14] This criterion is required by the Internal Revenue Service (IRS) to avoid taxation of the general partnership as a corporation.

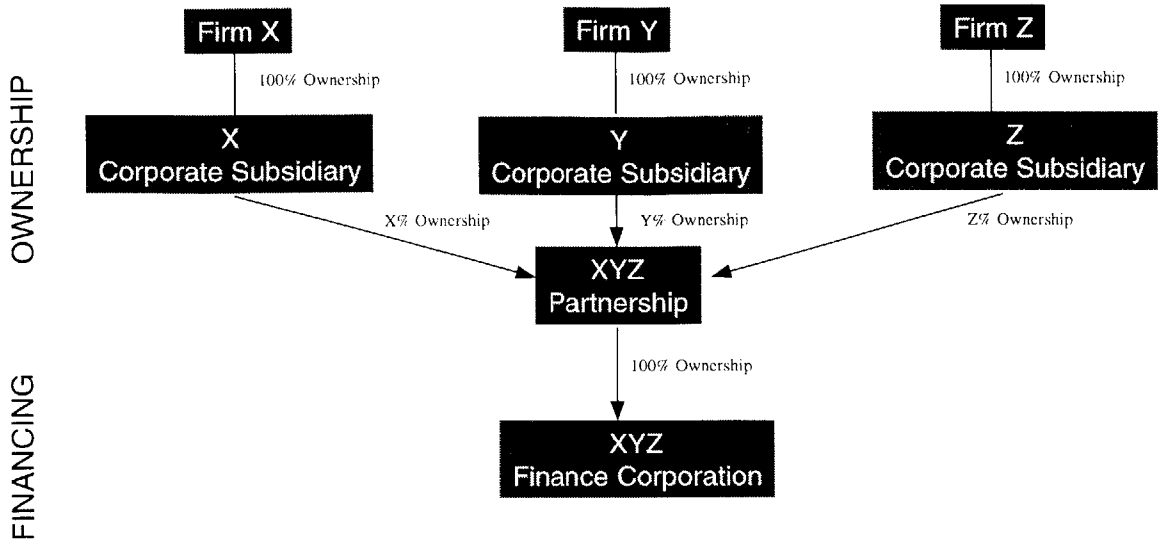

Fig. 3.4: Ownership Structure when a project is organized as a General Partnership using corporate subsidiaries and corporate financing vehicle. Adapted from Nevitt.

Advantages:

The partnership form of ownership is typically selected when (1) the project sponsor does not have sufficient financial resources to pursue the project in its own name, (2) all partners want to participate in project management and control, or (3) all partners have similar tax positions.

Beyond these most common reasons, a project sponsor may see the following advantages as sufficiently incentive to select the partnership of organization for the project:

- Debt of the partnership is off-balance sheet for the sponsor if less than 50% owned;
- Economies of a large-scale project may be achieved by combining financial resources and technical expertise of several partners;

- The borrowing cost may be lower as a result of combining the project with other partners;
- Partners immediately can benefit from tax deductions and investment tax credit.

Disadvantages:

Nevertheless, the partnership structure of ownership has disadvantages that must be considered when the project sponsors have to select a form of organization for a project they plan to develop. The general partnership structure does not afford nonrecourse or limited-recourse liability. As a result, the partners are jointly and severally liable for all the debts and obligations of the partnership. Moreover, the loss of absolute control over the project can be seen as a limitation for project sponsors.

3.3.4 Limited Partnership

A limited partnership form of organization is a business entity that expressly limits the liability of the limited partners to the extent of their capital contributions in the limited partnership. Nevertheless, limited partners can claim a proportionate share of tax deductions from the operation of the partnership. Limited partners and general partners in a limited partnership may be either individuals or corporations.

Limited partnership must always have at least one general partner. The general partner is liable for all the debts and obligations of the limited partnership but can mitigate its exposure by using the different techniques previously described. Limited partnerships have been used extensively to finance the development of oil and gas fields. Limited partnerships have been also used in financing real estate.

In structuring a limited partnership, care must be taken to meet the Internal Revenue Service criteria as previously described for general partnership. It is generally fairly easy to structure a limited partnership so as to avoid free transferability, limited liability, and continuity of life.

Under a limited partnership structure, each limited partner shares in the project profits while enjoying the associated limitation liability. The partners exercise minimal management rights since the exercise of such rights can transform their limited liability to general liability.

Accounting and tax considerations are similar to those enumerated for general partnership form of organization.

Figure 3.5 shows a typical ownership structure when a project is organized as a limited partnership.

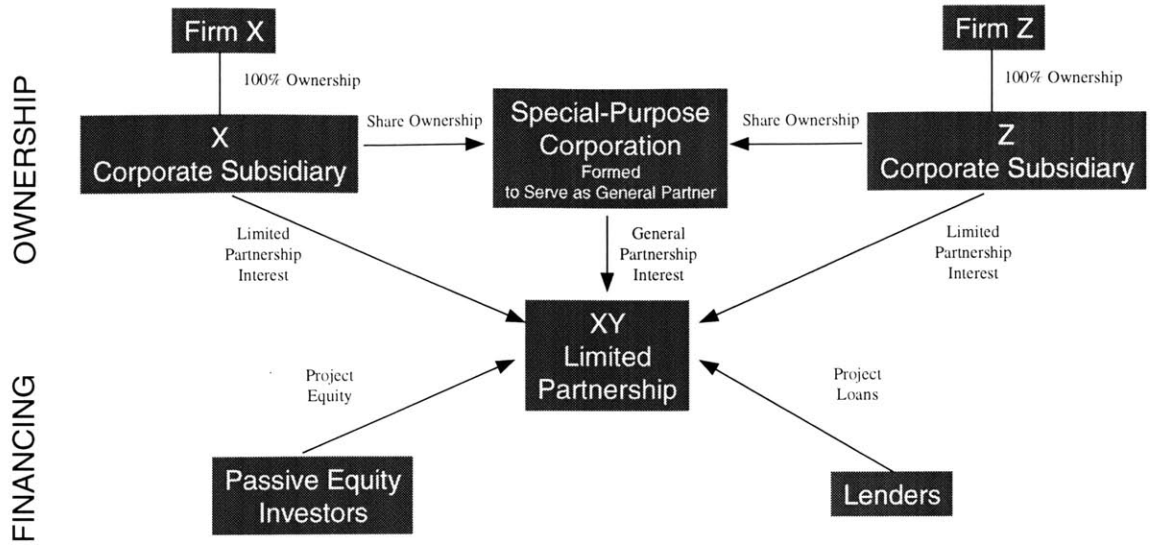

Fig. 3.5: Ownership Structure when a project is organized as a Limited Partnership. Adapted from Nevitt.

Advantages:

A limited partnership is similar to a general partnership, except that it has both general partners and limited partners. While a general partner is liable for all the debts and obligations of the limited partnership, liability of the limited partners is limited to the amount of their capital investments. Because of this limitation of liability available for the limited partners, the limited partnership structure is a useful form of organization for passive equity investors. Such a structure is sometimes used for the participation of contractors or equipment suppliers to project equity. These participants advance capital to the project to ensure that the project financing is arranged so that return on their investment is realized.

Beyond the main reason that the limited liability offers to the project sponsors, the partnership form is generally selected because it provides the partners with the following advantages:

- Tax benefits are normally flow through to the partners in same proportion as their ownership percentage;
- Project assets and liabilities are not included on the project sponsors' balance sheet if they own less than 50% of the project;
- Project sponsors' performance ratios are not affected, neither do their loan covenants;
- Access to new source of funds is provided.

Disadvantages:

Nevertheless, the project sponsors, before selecting the limited partnership structure, have to become aware of some of the restrictions tied to this type of form of organization. The loss of some control over facilities or service functions, and the time and legal expenses associated with the arrangement of the financing can prevent the project sponsors from selecting the limited partnership as the most efficient structure to organize the project.

3.3.5 Joint Venture

There are two types of joint ventures: equity joint ventures and contract joint ventures. Equity joint ventures typically involve the formation of a separate entity, such as a partnership or a corporation. Contract joint ventures, by contrast, do not usually require the creation of a separate legal entity.

After a description of what a contract joint venture is, one of the common joint venture ownership structures known as undivided joint interest is presented.

A contract joint venture used for structuring project finance is defined as a combination of entities that agree by contracts to achieve a common purpose. Joint venture closely resembles a partnership. However, there are some differences that make a distinction between a joint venture and a partnership:

- Participants to a joint venture contract among themselves rather than enter into a partnership agreement;
- Partners may be jointly and severally liable beyond their investment. Participants to joint venture are liable only to the extent of their investment and advance to the project;
- Property of a partnership may be held in partnership name. Property of a joint venture is held as tenants in common: each party holds an undivided interest of the project;
- The joint venture often has a fairly limited purpose and life, which may be determined by the nature of the project itself.

When the project is organized, one of the participants with extensive experience in the type of project that must be constructed and operated is typically designated to serve as the manager, with the authority to act for the joint venture. The participants also choose, by agreement, a party to act as the operator of the joint venture. Although this party has some characteristics of a

general partner, the operator does not have the broad management control over the project facility nor the general liability that define a general partner.

Contract joint ventures by their nature do not constitute legal entities that can easily borrow for their own account. Funds are advanced as needed by each participant in the joint venture.

Joint ventures have been used by electric and gas utility companies, and in the development and operation of mines. For illustration, the figure 3.6 shows the typical joint venture ownership structure used for the development and operation of a mine.

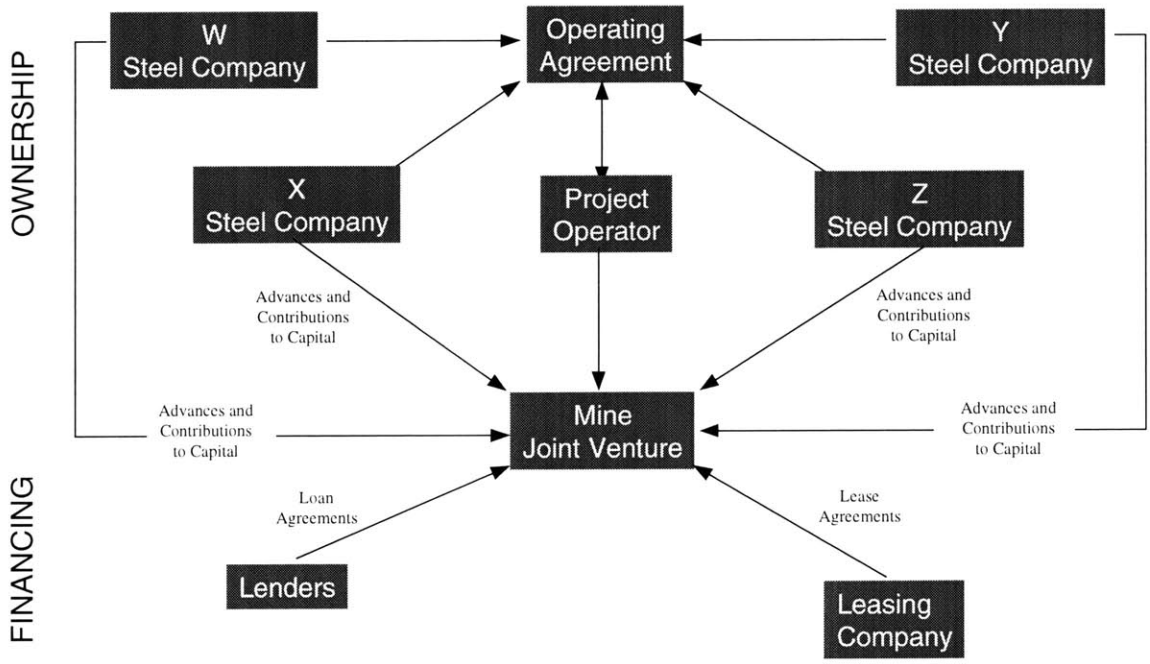

Fig. 3.6: Ownership Structure when a Project is organized as a Joint Venture for the development and operation of a mine. Adapted from Nevitt.

Undivided Joint Interest:

Under the undivided joint interest ownership structure, each participant owns an undivided interest in the project's assets, and shares in the benefits and risks of the project in direct proportion to the ownership structure.

When the project is organized, the participants choose one of them to serve as the project operator. This arrangement is particularly suitable when one of the owners has operations in the same business. The duties of the project operator and the obligations of all the parties involved in the project are specified in an operating agreement. The project operator is responsible for maintaining a record of capital expenditures and operating expenses, and for making the day-to-day operating decisions that determine the profitability of the project.

In general, each participant is required to assume responsibility for raising its share of financing for the project. Each sponsor is free to do so by whatever means are most appropriate to its financial positions.

The project entity could not issue debt securities on its own because it does not have the legal standing to enter into a contract to repay its debt service. As a result, the project sponsors are the financing entities. According to Finnerty (1996), the undivided joint interest has particular appeal when firms sponsoring the project are different credit rating. Indeed, by financing independently the project, the higher-rated entity can borrow at a cost that is lower than the cost at which the project entity can borrow, based on its composite credit structure. On the other hand, depending on the sponsor's ability to take immediate advantage of the tax deductions of ownership arising out of the project, direct co-ownership

may also provide the project sponsors with immediate cash flow to fund their own equity investments.

However, under certain conditions, it may be preferable to create a separate project entity to arrange the financing of the project. It could be the case when the project's construction cost is large relative to each sponsor's total capitalization. In that situation, the project-related financing obligation combined with the normal financing requirements of ongoing businesses might exceed the project sponsors' ability to repay its total debt service. Moreover, the additional debt load might cause the deterioration of the sponsors' debt-to-equity and interest coverage ratios. Such decline might result in lower bond ratings, and therefore higher interest costs.

Accounting Considerations:

An undivided joint interest is not recognized as a separate entity for accounting purposes. Each participant has to reflect its proportionate share of project assets, revenues, and operating expenses in its own financial statements. Any direct liabilities incurred by a co-owner to fund its share of the project's cost appear on its own balance sheet.

Tax Considerations:

The Internal Revenue Service (IRS) generally considers that an undivided joint interest form of business should be treated for tax purposes as a partnership.

Project tax deductions arising from interest, depreciation, and investment tax credit flow directly to the co-owners. This tax benefits treatment avoids "double taxation" of the project income. Nevertheless, in some instances, the IRS has deemed an undivided joint interest as an association, which is treated as a corporation for tax purposes. Because of the disadvantages that arise from being taxed as a corporation, the operating agreement must to be arranged so that at least two of the following conditions be guaranteed:

- Management is not centralized but decisions are making jointly;
- Ownership interests are not transferable without the consent of the other sponsors;
- At least one the sponsors must have direct exposure to project liabilities;
- The joint venture terminates upon bankruptcy, resignation, or expulsion of any sponsor.

A joint venture is typically selected for a project financing transaction when a project sponsor does not have the financial or management resources to undertake the project alone. The project sponsor joins with other entities to achieve the project by combining financial resources and technical expertise, and by sharing risks. Sometimes, the project sponsor may have all of the qualifications, resources, and experience to develop the project itself, but lack of political contacts in the country in which the project is located can prevent it from undertaking the project. One alternative for the project sponsors is to combine

equity with local entities to develop, construct, own, and operate the project through the creation of a joint venture. Other factors, among others, can weigh in favor of a joint venture structure, such as efficient allocation of tax benefits, avoidance of restrictive covenants in loan agreements, spreading of risk, and lower borrowing cost.

3.4 Comparison of Alternative Forms of Organization for a Project

Table 3.2 summarizes the principal considerations associated with selecting the appropriate form of organization for a project.

	Corporation	Partnership	Joint Venture (Undivided Joint Interest)
Ownership of Project Assets	Project assets are owned by the corporation	Project assets are owned by the partnership.	All property constituting the project is owned directly by the participants as tenants in common.
Operating Characteristics:			
❑ Management	The project corporation operates the project. Employees of the project corporation manage the project. The equity owners are represented on the project corporation's board of directors.	The partnership operates the project. One of the general partners is usually designated the manager of partnership operations. The partnership agreement specifies operating and management authorities.	Co-owners appoint an operator to manage the project. Approval by a steering committee containing representatives of all the co-owners is often required for major decisions.
❑ Sharing of project costs and benefits	Allocation is determined by contracts among the project participants.	The partners enter into a partnership agreement, which specifies their rights	Project costs and benefits are usually allocated in the same proportion as project

		and obligations. Project costs and benefits are allocated in proportion to project ownership.	ownership. Co-owners enter into an operating agreement, which specifies their rights and obligations.
Participants' Liability for Project Obligations:			
❑ Nature of liability	Equity owners have no direct liability for project obligations except as specifically defined in contractual undertakings.	General partners are jointly and severally liable for all the debts and obligations of the partnership. Limited partners have no liability for partnership obligations except obligations they specifically undertake.	Operating agreement normally provides that any liabilities relating to the co-tenancy will be borne by the project's co-owners in proportion to their respective ownership percentages.
❑ Dollar amount of exposure	Liability limited to equity contributions to the project except as otherwise agreed.	Liability unlimited for general partners. Liability limited to equity invested for limited partners except as otherwise agreed.	Unlimited liability.
Financing:			
❑ General structure	Equity funds are contributed by sponsors. The project corporation issues debt secured by a lien on project assets and the project corporation's right to receive payments under various contracts.	Sponsors provide equity in the form of partners' capital contributions. The partnership issues debt secured by a lien on project assets and the project company's right to receive payments under various contracts.	Each co-owner is responsible for providing its pro rata share of the capital cost of the project from its own financial resources.
❑ Financing Vehicle	Project corporation or a special-purpose corporate subsidiary.	Special-purpose corporate subsidiary of the general partnership.	Corporate subsidiary of each co-owner.
Participants' Accounting Treatment for Equity Investment:			
❑ Less than 20% ownership and no effective control	Equity investment accounted for under the "cost method." Income recognized only to the extent dividends are received. Project assets and liabilities are not included on equity holder's balance sheet.	Equity investment accounted for under the "cost method." Income recognized only to the extent dividends are received. Project assets and liabilities are not included on equity holder's balance sheet.	Proportional consolidation of project assets, revenues, and expenses.
❑ Greater than 20%	Equity investment	Equity investment	Proportional

and not over 50% ownership and no control	accounted for under the "equity method." Pro rata share of project income or loss is recognized by sponsor. Project assets and liabilities are not included on sponsor's balance sheet.	accounted for under the "equity method." Pro rata share of project income or loss is recognized by sponsor. Project assets and liabilities are not included on sponsor's balance sheet.	consolidation of project assets, revenues, and expenses.
❑ Greater than 50% ownership	Full consolidation is normally required on a line-by-line basis.	Full consolidation is normally required on a line-by-line basis.	Proportional consolidation of project assets, revenues, and expenses.
Income Tax Treatment:			
❑ Taxable entity	Project corporation.	Partners.	Co-owners.
❑ Availability of project depreciation, interest expenses, and investment tax credit to sponsors	Project affects taxable income of sponsor only to the extent of dividends received from the project.	Tax benefits flow through to partners in same proportion as ownership percentages.	All tax consequences of project flow through directly to the co-owners.
❑ Limitation on project deductions taken by participants	Project deductions may not be taken by equity holders unless consolidation is permitted. No limitation is tax consolidation occurs.	Deductions (except ITC) are normally limited to the tax basis of each partner's investment.	No limitations.
❑ Taxation of project income	Project income is taxed at project corporation level. Dividends are also taxable to equity holders after 70% dividends received deduction.	Project income is taxed at partner level only.	Project income is taxed at co-owner level only.

Table. 3.2: Comparison of alternative forms of business organization for a project. Directly adapted from Finnerty.

3.5 Public-Private Partnerships

Public-private partnerships are joint ventures in which the private sector and government cooperate to develop a project more quickly and more efficiently. Each participant uses its particular strengths to make the project successful. Public-private partnership arrangements vary from full private ownership subject to governmental approvals to public projects in which the private partner provides capital and management services. This last structure allows a government that uses project financing to fund a public-oriented project to obtain both private-sector funding and private-sector management. Project financing therefore is used by the government to reduce its need of borrowing, shift part of the project risks to the private sector, and achieve more effective management of the project. The government can also limit the private-sector participation to only management services. In that case, the government contracts with the private sector for providing management services while continuing to finance the project and retaining ownership of the project assets. So, the public-private partnership structure can take several forms. Table 3.3[15] presents the different means of involving the private sector in project development.

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[15] Chew, Donald H.and Stern, Joel M., *The Revolution in Corporate Finance: Third Edition*, Danvers, Massachusetts: Blackwell Publishers, 1997, pp. 225.

Arrangement	Finance	Management
Project Finance	Private Sector	Private Sector
Privatization	Private Sector	Private Sector
Service Contracts	Government	Private Sector
Leases	Private Sector	Government
Nationalization	Government	Government

Table 3.3: Private-sector participation in project development.

Private-sector involvement is increasing in many areas traditionally developed and managed by the public sector. Transportation projects are very attractive to private participation. For example, toll roads and bridges, airports, and railways can often generate adequate financial rate of return to attract private capital investment. Generally, if a transportation project or any infrastructure project is associated with the possibility of generating revenues from user fees, its development could potentially be insured by a public-private partnership.

In recent year, infrastructure needs in the United States have grown more rapidly than the available funding[16]. Many states have encouraged so far the private-sector participation in the development, financing, operation, and ownership of transportation facilities, such as toll roads or toll bridges by arranging the legal framework.

Outside the United States, the needs for infrastructure development are still growing but cannot be met with local funding. Infrastructure projects, particularly in the emerging markets, have been financed using in some extent public funds

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[16] *Financing the Future*, Report of The Commission to Promote Investment in America's Infrastructure, Washington, D.C.: U.S. Department of Transportation, February, 1993.

and private capital both supported by multilateral agencies, such as the World Bank.

4 Project Finance Security Arrangements

4.1 Role of Security Arrangements in Project Finance

Security arrangements, which take the form of contractual agreements, are primarily designed to allocate project risks and financial returns among the different parties involved in a project. They are also designed to enable the project company to extend its borrowing capacity. Indeed, an adequate set of project contracts provide project lenders with guarantees of debt repayments taking into account the credit support given by third parties interested in the project development. For example, an off-take agreement enables the project sponsors to support the debt financing by establishing whether the project will generate sufficient cash flow.

" Project contracts are the foundation for the success of a project financing and most of the issues relating to the structuring of a project finance transaction are usually addressed by project contracts.[17]" Therefore, project contracts play the utmost important role in structuring a project finance transaction and ensuring its success.

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[17] Buljevich, Esteban C. and Park, Yoon S., *Project Financing and the International Financial Markets*, Boston: Kluwer Academics Publishers, 1999.

4.2 Project Agreements and Contracts[18]

The project company enters with project contractors into different project contracts for the purposes of the development of the project. This section presents some of the most important project contracts in a project finance transaction.

4.2.1 Concession Agreement

The right to develop, own, construct, and operate a project is in general granted by the host government in a concession agreement. A concession agreement is entered into between the host government and the project company or the project sponsors if the project company is not yet formed. A typical concession agreement contains the following terms:

- Terms of the concession;
- Description of project company's rights;
- Permissive equity structure for the project company;
- Management of the project company;
- Restrictions on foreign ownership and control of the project company;

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[18] This section is based on Buljevich, Esteban C. and Park, Yoon S., *Project Financing and the International Financial Markets*, Boston: Kluwer Academics Publishers, 1999, Chapter 8.

- The manner by which the host government will be compensated for granting the concession;
- Applicability of tariffs and price controls to the project;
- Default provisions by which the concession could be terminated;
- Termination procedure;
- Concession renewal provisions.

The host government may require various protections given by the project company in the concession agreement. These guarantees may include:

- Service requirements from the project company throughout the concession term;
- Sufficient operation and maintenance activities so that the project facility, which is in general transferred to the host government at the end of the concession period, retains value;
- Rights of the host government to terminate the concession if certain events occur to the project company.

From the project company and lenders' perspective, the host government also has to provide certain assurances. These assurances to the project company and the project lenders may include:

- Assurances of availability of energetic resources;
- Work visas for management;
- Provision of necessary real estate rights;

- Assurances against expropriation and nationalization of the project;
- Protections against change in law and currency convertibility.

4.2.2 Construction Contracts

The project company usually enters with one or more construction companies and equipment suppliers into construction contracts for the purposes of the design, engineering, construction, and procurement of the project facilities. In general, construction contracts are turnkey contracts requiring the construction company to build and deliver the project facilities at a certain predetermined fixed price, by a certain date, and in accordance with certain specifications and performance warranties.

A turnkey construction contract usually includes the following provisions:

- A comprehensive description of the services to be performed by the constructor, such as design and engineering services; procurement of all materials and equipment; quality control; safety procedures and personnel training; procurement of all relevant permits and authorizations relating to the construction of the project and clean up activities;
- A fixed-sum price, payable in installments upon achievement of certain specific construction events;
- An undertaking by the constructor guaranteeing that the project facility will be completed by a certain date, with liquidated damages

payable by the constructor for each day of delay to compensate the project company for all costs associated with such delay;

- A performance undertaking by the constructor guaranteeing that the project facility will perform in accordance with certain technical specifications;
- Warranties for design, materials and equipment for a period of approximately one or two years after project completion;
- Insurance provisions requiring the constructor to contract a comprehensive insurance package covering all insurable risks relating to the construction phase of the project prior to its completion;
- Force majeure provisions to excuse construction delays or cost over-runs caused by events beyond the control of the constructor;
- Dispute resolution mechanisms.

4.2.3 Supply Agreements

The project company usually enters with one or more suppliers into long-term supply agreements for the purposes of the provision of the supplies necessary for the start-up and operation of the project. The supplies provided may include raw materials, gas, coal, fuel and other energetic resources. Consequently, supply agreements are designed to give some certainty in respect of the availability and the price of the necessary inputs to produce and deliver

project outputs. Supply agreements must be consistent with the terms of the off-take agreement.

Supply agreements usually include the following provisions:

- The commitment of the supplier to deliver sufficient quantities of specific supplies in order to enable the project company to meet its obligations under the off-take agreement;
- The obligation of the supplier to ensure a quality of supplies that meets the specifications under which the project facility was designed;
- Pricing provisions providing predictability of price over the life of the project;
- Transportation provisions allowing the project company to receive delivered supplies on the project site;
- Provisions requiring the supplier to pay liquidated damages in the event that it does not comply with its delivery obligations;
- Dispute resolution mechanisms.

The term of the supply agreement typically has a length at least equal to the term of debt financing. This helps to ensure that input costs are sufficiently predictable for the project debt financing.

4.2.4 Off-take Agreement

In general, the project company enters with a governmental agency or a private-sector company into a long-term purchase contract in respect with the project outputs. Under the terms of an off-take agreement, the off-taker agrees to buy a certain quantity of project output from the project company for a certain period of time at a certain predetermined price. Such arrangement provides certainty that the project after its completion will generate sufficient cash flow to cover its operating expenses and service its debt. Therefore, an off-take agreement provides project lenders with security and protects them from the risk of not being paid.

An off-take agreement generally includes the following provisions:

- Quantity and quality of the project output to be delivered, purchase price and delivery schedule;
- Incentive payments and low performance penalties in order to encourage a project company to operate efficiently;
- A definition of force majeure consistent with the provisions under the concession contract, the construction contract, the supply agreements and the operating and maintenance agreement;
- Credit enhancement provisions relating to the off-taker payment obligations;
- Liquidated damages provisions;
- Dispute resolution mechanisms.

The term of the off-take agreement typically has a length at least equal to the term of debt financing. This helps to ensure that the generated cash flows are sufficiently predictable for the project debt financing.

Undertaking an off-take agreement is not always possible. Certain infrastructure projects, such as toll roads, toll bridges or telecommunication networks generally are undertaken without any off-take agreement. In the case of most infrastructure projects, there is no certainty of the project cash flow since the utilization of such a particular infrastructure facility by the public is highly unpredictable. For example, in the case of toll road projects, governmental agencies that award a concession to a project company generally cannot guarantee a certain number of users of the roads.

In the case of projects for which project output is a commodity, such as oil, gold or copper, the project company may decide to undertake the project without an off-take agreement. However, when project revenues are exclusively depend on the market prices, the project company must hedge against the risk of commodity price fluctuations. Hedging against such risk enables the project company to give some certainty to the cash flow generated by the project and support its debt financing.

4.2.5 Operating and Maintenance Agreement

A project company has two options for project operation. It can either operate the project by its own means, without contracting any operating and

maintenance agreement, or delegate the operation, maintenance and management of the project facility to an operator. Under the terms of an operating and maintenance agreement, the operator must ensure that the project is operated, managed and maintained according to specific performance criteria in order to meet the off-take agreement requirements. Similar to the constructor's responsibility, an operator is responsible for all aspects of project operation and maintenance. Nevertheless, the operating and maintenance agreement is not as critical to the project as is the construction contract since the operator can be replaced without major consequences.

An operating and maintenance agreement generally includes the following provisions:

- Description of the general services to be provided by the operator, such as performing day-to-day operation, management and maintenance activities; dealing with the various project contractors; procuring the necessary equipment; selecting, training and managing employees for operation;
- Preparation of an annual budget for the operation and maintenance of the project;
- Administration of project contracts including the coordination of supply deliveries under the supply agreements and output deliveries under the off-take agreement;
- Insurance provisions requiring the operator to secure comprehensive insurance package covering the operating phase;

- Dispute resolution mechanisms.

When the operation and maintenance of a project facility are carried out by the project company itself, it may eventually arrange for some technical assistance under the terms of a technical assistance agreement.

4.2.6 Cash Contribution Agreement

Completion of the construction phase of a project is an important step to ensure the overall success of the project. Therefore, project lenders, who need assurances regarding the project completion, usually require that the project sponsors enter into a cash contribution agreement with the project company. Under the terms of a cash contribution agreement, the project sponsors agree to provide the project company with additional funds during the construction phase to support construction cost over-runs or cash shortfalls not foreseen in the financial plan to enable the project to be completed. A cash contribution agreement may ensure that in the event of default of project completion the project sponsors must pay back the debt financing in full. In general, project lenders want to have the right to enforce project sponsors to comply with the terms of the cash contribution agreement. This protects lenders from project completion risk.

4.3 Project Finance Contractual Arrangements Structure

Figure 4.1 summarizes a typical project finance contractual arrangements structure with some of the major participants involved in a project finance transaction.

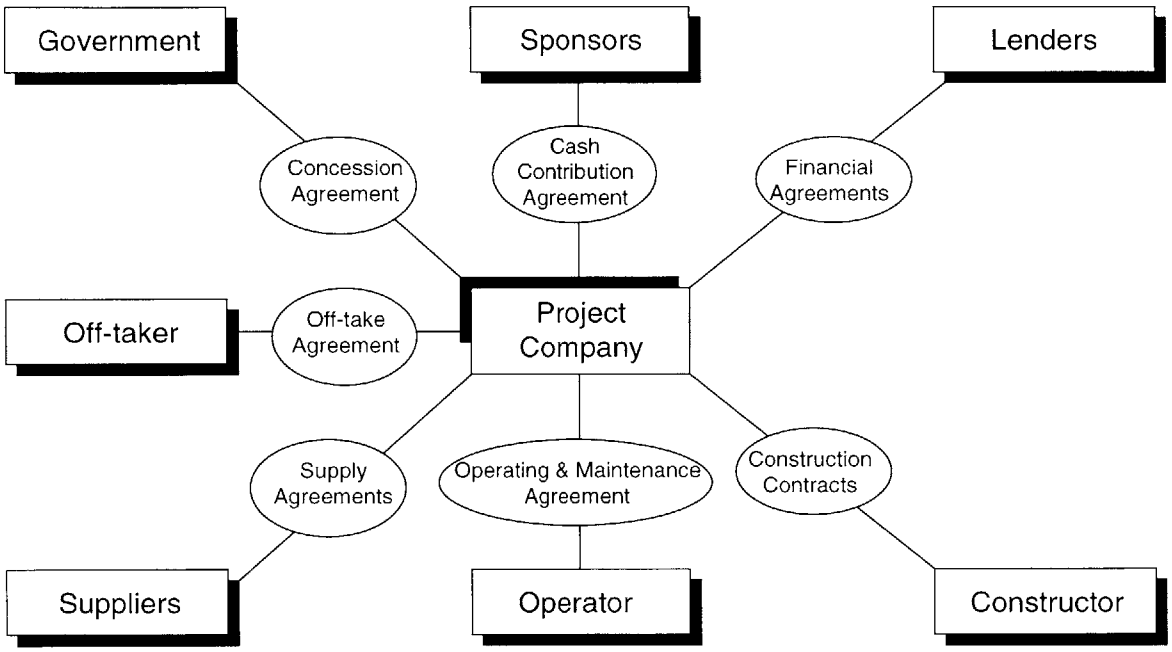

Fig. 4.1: Project finance contractual arrangements structure. Adapted from Buljevich and Park.

5 Project Financing Structures

Chapter 4 has shown that the object of the contractual arrangements is to provide all parties involved in the project with the incentives to act efficiently by transferring the risks to those best able to manage them. For example, construction risks are borne by the constructor and the risk of insufficient demand of the project's output is borne by the purchaser.

Since there is a limit to how much can be written into a contract and how efficiently that contract can be monitored, contractual arrangements need to be complemented by financial arrangements. This set of financial arrangements seeks to constrain the parties involved in the project to acting on the interest of the project. In infrastructure projects, for example, the main constructor typically is one of the investors in the project. This equity participation provides the constructor with an incentive to be efficient in the construction of the project facility since the project profits depend directly on how well the project facility is built.

5.1 Types of Capital and Debt

Before analyzing the appropriate proportions of the different types of capital to be used to finance a project, which is the object of the project capital

structure section, this section presents the three types of capital used in project financing: equity, quasi-equity, and senior debt.

5.1.1 Equity

"The equity investment in a project represents the risk capital.[19]" It refers to funds put into a project by either the project sponsors or passive investors who are not directly involved in the project promotion. Equity capital is typically provided in the form of common or preferred stocks. Lenders advancing more senior forms of capital to the project look to these funds as a commitment by the project sponsors to the project, and therefore as a safety margin. Project financiers typically require equity investments, which are generally provided by the owners of the project, because equity contributions mean a lower risk for them.

Equity investors are the last in priority for repayment in case of default of the project company. However, the expected rate of return on their investment can be substantial. This expectation is the motivating factor for investors providing equity capital to the project.

The appropriate proportions of debt and equity for a given project are a matter for negotiation between the project sponsors and the project lenders since

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[19] Nevitt, Peter K., *Project Financing: Fourth Edition*, London: Euromoney Publications, 1983, Chapter 4.

these two types of project participants do not necessarily have the same target capital structure.

5.1.2 Quasi-equity

Quasi-equity consists of subordinated loans or advances to a project, which is senior to equity capital but junior to senior debt. Subordinated loans can sometimes be used for advances required by project investors to cover construction cost over-runs or other payments necessary to maintain debt-to-equity ratios in order to avoid increasing interest rates.

Quasi-equity has numerous advantages over capital contributions. According to Nevitt (1983), quasi-equity typically provides the following advantages:

- Subordinated debt has a specific schedule for interest payments and repayment of principal, whereas dividends on stock are optional;
- Interest paid on debt is deductible for income tax purposes;
- Governmental agencies that cannot take an equity position in a project for policy reasons may be able to provide subordinated debt in order to attract senior debt to the project.

5.1.3 Senior Debt

Most borrowings from commercial banks for project financing are done in the form of senior debt. Senior debt is debt that is not subordinated to any other liability. Thus, senior debt holders are the first in priority for repayment in the event the project encounters difficulties in servicing its debt. Such lenders receive payments according to a specific schedule and a predetermined interest rate.

Senior debt could fall into two categories[20]: unsecured and secured loans. Such a distinction is important since secured senior debt holders have an advantage over unsecured senior debt holders. Secured loans are loans for which the project's assets are given as collateral. Such assets must be marketable, and therefore could be converted to cash to pay back the lenders. For example, in a fully secured loan, the value of the assets securing the debt equals or exceeds the amount borrowed. Lenders generally rely on the value of the collateral for repayment. However, the standing of the project sponsors and the probable success of the project also enter into the lending decision.

On the other hand, unsecured loans are only backed by the general credit of the borrower and not secured by any type of asset. Since projects tend to be new ventures with no operating histories, unsecured loans are generally

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[20] Nevitt, Peter K., *Project Financing: Fourth Edition*, London: Euromoney Publications, 1983, Chapter 4.

available to projects whose project sponsors have good reputations and sufficient capital or subordinated loans to meet the capital needs of the project.

5.2 Project Capital Structure

5.2.1 Project Financial Leverage

Project companies are generally highly leveraged. Project financial leverage, also called debt ratio, is defined as the ratio of debt to total capital. The average debt ratio for project financing is approximately 60% - 70%, but in some projects it could be higher. In fact, the level of debt a project can achieve depends on numerous factors, such as (1) the expected project's profitability, (2) the nature and the magnitude of the risks associated with the project, (3) the strength of the contractual arrangements among the project participants, and (4) the creditworthiness of the parties that provide credit support through contractual arrangements.

The project leverage does not remain constant. Its value changes over time. For a typical project, the debt ratio starts at 0%, rises to somewhere in the neighborhood of 60% - 80%, and then decreases to 0% in later years. This evolution of the project leverage during the project's life impacts on the financial valuation of the project. Indeed, the cost of equity, which is used to discount the free cash flows generated by the project, changes with the leverage. Therefore,

the use of a single discount rate for all years based on the project's target capital structure can lead to serious valuation errors. Esty (1999) showed how to address this problem using multiple discount rates rather than a single discount rate. Under this method, each discount rate for every year is based on the corresponding leverage. Damodaran (1994) and Grinblatt and Titman (1998) also recommend this approach. Nevertheless, this approach is not unanimously recommended and most valuation books, such as Ehrhardt (1994) and Finnerty (1996), recommend using the project's target capital structure to calculate the appropriate discount rate. So, the project leverage can significantly influence the project's valuation and its determination is an important step to assess the profitability of a proposed project.

5.2.2 Reasons of High Project Financial Leverage

In general, project companies are highly leveraged. Such leverage occurs despite the fact that it is difficult to attract potential lenders and that the arrangement of such a capital structure is costly. Moreover, lenders generally lend directly to the project company with only a limited recourse to the sponsors in case of default of the project company. This observation precludes the idea that the debt is a "cheap" source of finance and rises the question of why loans are not directly made to the sponsors.

There are plenty of explanations on the high concentration of debt in the project company but none of which appears to resolve completely this question.

In their article "*Using Project Finance to Fund Infrastructure Investments,*[21]" Brealey, Cooper, and Habib advance some of the more common reasons of such a high concentration of debt in the project company.

Bankruptcy Costs:

Typically the projects undertaken by project companies have low bankruptcy costs than those undertaken by the project sponsor. This is because the project's assets are essentially tangible and the efficiency with which the project facility is operated is not really affected by a change in ownership. Consequently, if the bankruptcy costs of the sponsor are higher than those of the project company, it could be more efficient to isolate the debt in the project company to ensure that a potential bankruptcy of the project does not affect the sponsor's business. The low cost of bankruptcy for project companies may therefore explain why project companies use such a high debt level.

Taxes:

When a project is located in a high-tax country and the project sponsor in a lower-tax country, it may be beneficial for the project sponsor to locate the debt in the high-tax country to maximize its interest tax shields. Nevertheless, the difference in tax rates does not explain (1) why lenders have limited recourse to the project sponsor and (2) why the project company is so leveraged when both

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[21] Chew, Donald H., Stern, Joel M., *The Revolution in Corporate Finance: Third Edition*, Danvers, Massachusetts: Blackwell Publishers, 1997, pp. 223-236.

the sponsor and the project company are submitted to the same tax considerations.

Political Risk:

The difficulty of writing a comprehensive concession agreement with a host government provides the need for financing arrangements that prevent the government from taking actions that may render the project unprofitable. One such arrangement is for the host government to take equity in the project company. Another is an extensive reliance on limited recourse financing. By concentrating debt in the project company, the sponsors ensure that the cost of adverse government action falls directly on lending banks and agencies. Lenders generally consist of a syndicate of major banks from a wide range of countries, national and multinational agencies such as the World Bank, the International Finance Corporation, and the Asian Development Bank. All have considerable political influence, and can prevent the host government from acting against the interest of the project. Moreover, the national and the multinational agencies, which generally hold subordinated debt, are further exposed to the consequences of adverse government actions. In contrast, the commercial banks tend to hold senior debt in the project.

In addition, the national and the multinational agencies also provide loan guarantees, which are generally intended to protect lenders against political risk. For example, the World Bank may assist the project company in raising debt by

offering a partial risk guarantee that covers the host government's contractual obligations and political force majeure risks.

Protection against political risk may explain the debt structure of project companies in developing countries but does not explain why the same debt structure is also used in politically stable countries.

Consequently, the need of protection against political risk for projects undertaken in developing countries, where political decisions can be made against the prosper development of the project, can explain that the project sponsors choose to incorporate these projects in a separate company using a large amount of debt. This choice is mainly motivated by the guarantees that multinational agencies can bring into the project. From the equity investors' point of view, this debt structure can be considered as a method to mitigate political risks and ensure them a higher rate of return.

Information Costs:

Generally, when lenders award a loan, they need to evaluate the creditworthiness of the borrower and monitor the use of the assets financed by the loan. A possible benefit of the project finance, and of the associated lack of recourse, is that lenders have to focus on evaluating and monitoring the project only. This consequence of the limited-recourse structure can be seen as an advantage for the lenders since they reduce their costs in evaluating and monitoring the project.

Free Cash Flow:

According to Michael Jensen (1986), companies with a surplus of cash and lack of worthwhile projects have tendency to invest this cash in negative net-present-value projects rather than return it to shareholders. Consequently, leverage ensures that cash is used to service debt. Nevertheless, this argument does not explain why the debt is located in the project company rather than in the parent companies. There are two possible reasons to explain the location of the debt in the project company. One is that the sponsors may find it difficult and costly to monitor the use of free cash flow within the project company, and therefore cannot prevent the risk of reinvesting it unproductively. The other is that, when there is more than one parent company, the owners may have different views about how to use cash. By ensuring that cash flows are used to service debt, such disagreements are avoided.

Another reason that can explain that the project company is characterized by a high debt-to-total capitalization ratio is that the project sponsors seek to preserve their debt capacity. By concentrating debt in the project company, sponsors do not change their debt-to-equity ratio, and consequently conserve their capacity of borrowing. Therefore, since the cost of debt increases with the leverage, the sponsors seek to avoid increasing their debt level when undertaking new projects. Consequently, the sponsors can undertake profitable projects, which provide an acceptable rate of return to their equity investors, without changing their debt standing and increasing their cost of debt.

5.3 Construction Financing[22]

The development of a project finance transaction requires the project sponsors to arrange both construction financing and permanent financing. Construction financing ensures the availability of sufficient financial resources to complete the construction phase of a project. Construction financing typically is arranged through bank loans provided by commercial banks or direct loans from the project sponsors.

5.3.1 Bank Loan Facility

One alternative for construction financing is to have the project company or a special-purpose financing entity borrow short-term funds for construction directly from commercial banks. If a special-purpose financing vehicle is used, the project company would borrow the money raised by this entity under terms identical to those under which this entity borrowed the money. Under this alternative for construction financing, lenders secure their loans on the same contractual arrangements that those used by long-term lenders in connection with the permanent financing. Figure 5.1 shows the two possible ways for project sponsors to raise funds to finance the construction phase of a project.

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[22] This section is based on Finnerty, John D., *Project Financing: Asset-Based Financial Engineering*, New York: John Wiley & Sons, Inc., 1996.

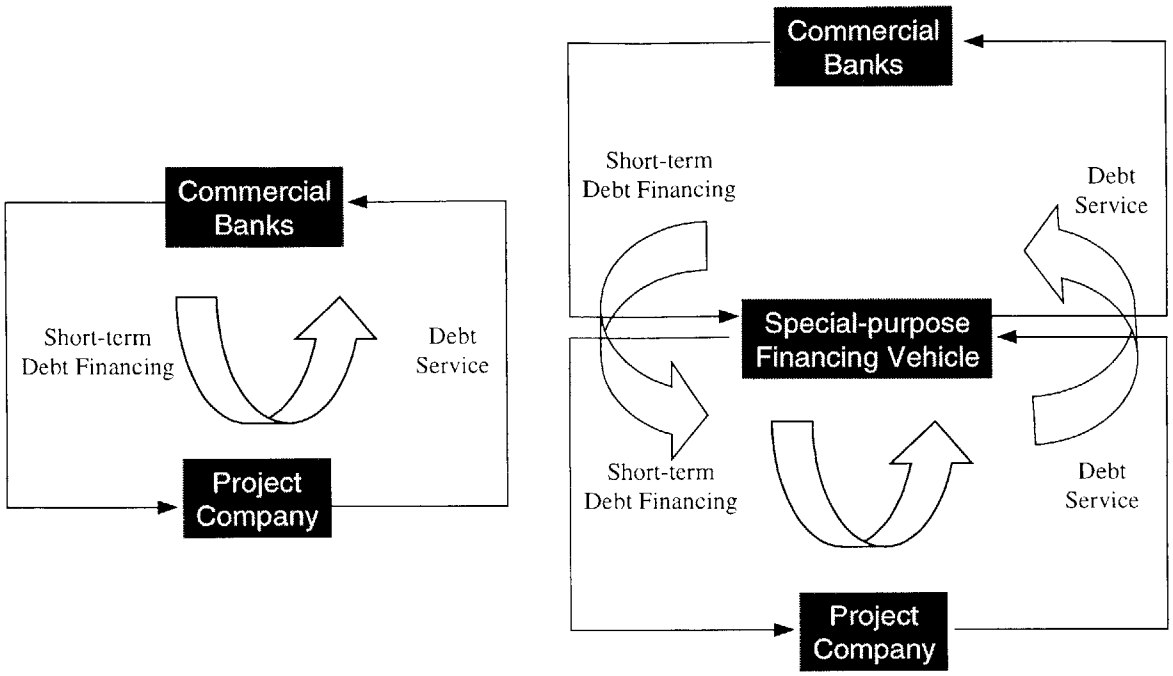

Fig. 5.1: Ways of financing the construction phase of a project.

Construction loans usually are disbursed in multiple drawdowns based upon a construction loan disbursement schedule and subject to the occurrence of certain major events for engineering, procurement, construction, testing, and start-up of the project facility.

5.3.2 Direct Loan by the Sponsors to the Project Company

A second alternative for construction financing is to have each of the project sponsors borrow its share of the required construction financing directly from commercial banks, and then lend such funds to the project company. Following project completion, the project company arranges long-term debt financing for the operation of the project facility. The project company then

repays its debt to the project sponsors using the proceeds of the long-term debt financing. Figure 5.2 shows this second alternative in which the project sponsor is directly involved.

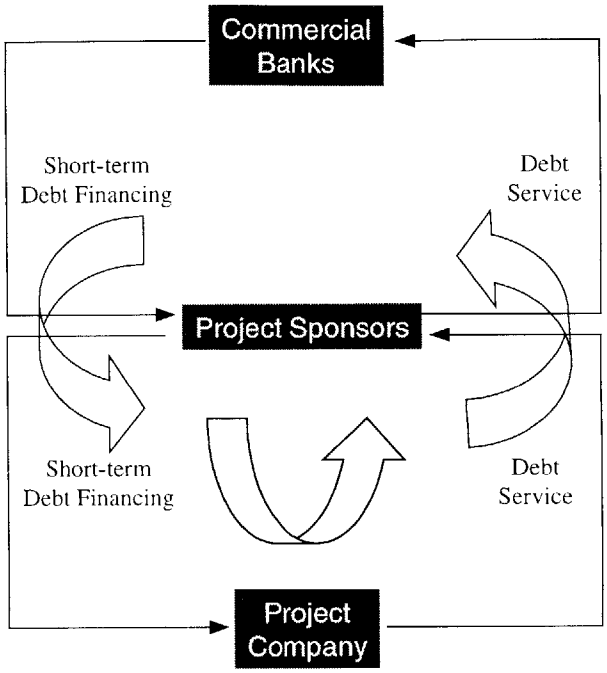

Fig. 5.2: Way of financing the construction phase of a project in which the project sponsor is involved.

This alternative has a structure similar to that using a special-purpose financing entity. In both cases, the project company does not have any direct relationship with the project lenders. Nevertheless, there is an important difference that must be considered between these two alternatives. Indeed, the alternative involving the project sponsors makes the project sponsors directly responsible for all the completion risk. In this particular situation, the project sponsors bear the construction risk and have to pay back the project's debt even though the construction of the project facility is delayed or not completed. Therefore, to eliminate this liability, the project sponsors should transfer the

construction risk to the construction company. This could be done by arranging turnkey construction contracts with the firms in charge of the construction.

The alternative in which either the project company or a special-purpose financing entity arranges the debt financing with the project lenders is quite advantageous for the project sponsors. Indeed, in this case, the project sponsors limit the lender's recourse to their assets and reduce their exposition to the completion risk. On the other hand, the high concentration of debt within the project company associated with a high cost of debt reduces the expected project sponsors' rate of return. Nevertheless, the project sponsors have a greater interest in using the alternative in which they play only a role of credit support for the debt financing. Being not directly involved in the financing of the construction phase of the project, they limit their liability.

5.4 Long-term Financing

Investors are generally reluctant to advance funds for more than two years without receiving any interest payments. Thus, there will be some uncertainty as to whether permanent financing can be arranged before construction commences for projects with lengthy construction periods. Moreover, investors often require assurances that all the needed funds for the project development have been secured. Consequently, commitments covering all the funds required for the project from its development phase to its operation phase must be arranged at the same time. The long-term financing is generally provided by

either mezzanine financing, which consists of different types of debt, or capital market instruments.

5.4.1 Mezzanine Financing

The long-term financing usually consists of pure senior debt or a combination of senior debt and subordinated debt or preferred stock. This arrangement of different types of debt is sometimes called "mezzanine financing." Senior debt typically is provided by commercial banks, export credit agencies, multilateral and bilateral agencies.

The long-term loans are typically disbursed upon the occurrence of project completion and are applied to take out the construction loan, which is specifically used for the financing of all the construction and start-up project costs, and provide sufficient cash to operate the project facility. Securing such financing commitments generally requires that the project sponsors enter into a completion agreement with the project company. Such commitments are designed to provide project lenders with a strong guarantee that the project facility will be completed (1) in due time, (2) at the price agreed by the parties to the construction contract, and (3) according to the technical specifications.

A project company may arrange mezzanine financing when project economics are strong enough to easily cover the payment of debt service and all operating and maintenance costs. Such a financing structure offers investors an intermediate return on investment between senior lending and common equity

investment and carries a corresponding intermediate risk. Mezzanine financing may be useful to complement the traditional 2/3 capital structure for project financing adding a 1/3 of capital between senior debt and common equity. Thus, it can be used to reduce the exposure of senior lenders, equity investors or both to a project. However, mezzanine financing may raise certain complex issues between senior lenders and mezzanine investors as to, for example, uses of revenues of a project or sharing of payments.

5.4.2 Capital Market Financing

The long-term debt financing can also be provided by a myriad of capital market instruments, such as project bonds, floating-rate notes, and commercial papers. Although the use of capital markets for purposes of financing a project through a public offering or a private placement of debt securities, called "project bonds", has increased dramatically over the last few years, such a financing alternative still raises issues not present in the more traditional commercial bank lending. Buljevich and Park (1999) advanced the following issues:

- The use of capital markets is not in most cases an option for financing project construction because investors generally are reluctant to bear construction risk. On the contrary, once the project has been completed and has successfully operated for a reasonable period, capital market investors may be prepared to

purchase project bonds for the refinancing of the construction loans at a lower cost.

- Proceeds from the sale of debt securities are typically received in a single disbursement. However, projects usually require the flexibility of multiple disbursements consistent with the project schedule and budget. Consequently, this lack of flexibility usually prevents project companies from using a capital market financing.
- Traditional lenders, such as commercial banks, export credit or multilateral agencies, offer greater flexibility to a project company than a capital market facility does. The ability of a project to quickly react to any changing circumstances is a key element of a successful project financing. Banks, export credit or multilateral agencies are relatively easy to mobilize rapidly if an unforeseen event occurs. This is not the case of capital market investors and calling a meeting of bondholders is time consuming, costly, and does not insure a satisfactory result.
- As opposed to traditional forms of lending, project bonds require an appropriate rating by one of recognized rating agencies in order to tap either the public or institutional investor markets. Without a grade rating, issuing project bonds usually is a risky business and is not considered as the best alternative to raise funds for a project.
- Capital market facilities are not easy to integrate as part of a financial plan that consists of several other types of lenders.

Actually the negotiation between traditional lenders on the one side and bondholders in the other side is a hard and time-consuming process.

- Capital market issues require the disclosure of sensitive information to prospective investors. Generally project sponsors are reluctant to disclose such information to the public and prefer to keep this information within a limited number of interlocutors.

Nevertheless, capital market funding may be a viable alternative for project financing as it can provide a fixed-rate financing at a cheaper cost and for a term usually longer than traditional lenders offer.

5.5 Project Financing Structures over Project Phases

The cash flow requirements of a project vary depending on the stage of the project. A typical project can be divided into three major phases: development, construction, and operation. To meet the financial requirements of each phase the project company has to find an appropriate financing structure.

5.5.1 Project Development Phase

During the development phase of a project, which can be lasted several years depending on the size and the complexity of the project, the project requires funds to support its development. Such funds are used to perform extensive engineering feasibility studies. These studies must be as detailed as possible since construction and operating costs are directly dependent on the effectiveness of the original design specifications. Project developers generally retain outside engineering consultants to assist with design work and assess the project's technological feasibility. On the other hand, long-term lenders often require independent expert opinions, which are designed to provide them with guarantees that the project facility can be constructed within the time schedule and construction cost estimated and operated according to proposed specifications. During this phase, the project requires funds to be developed but does not produce any revenues. Moreover, at that time, the project has little or none tangible assets. Thus, the only way to finance the project during its development phase is through equity investments. Figure 5.3 shows the financing structure used to finance the development phase.

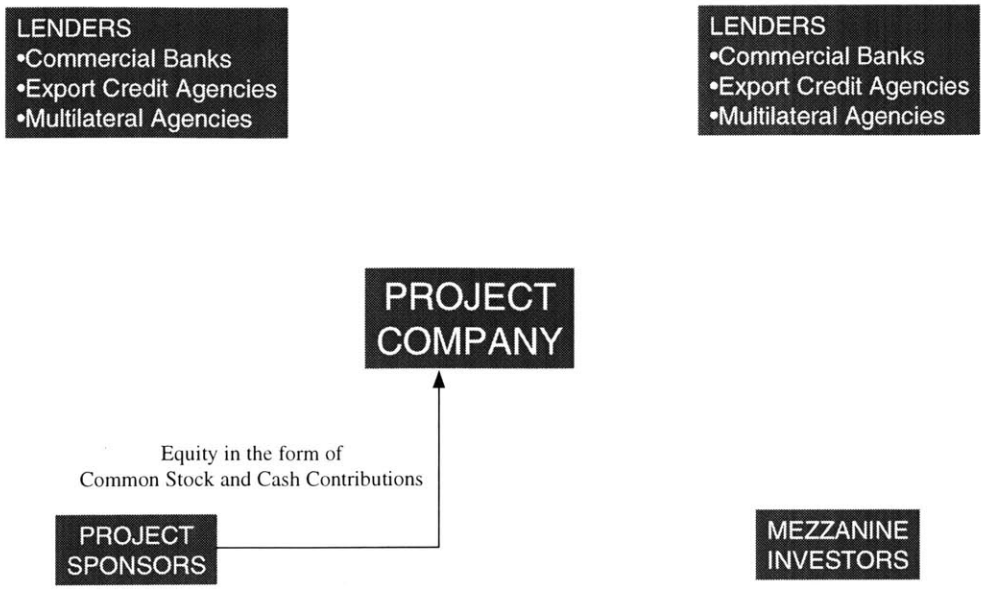

Fig. 5.3: Financing Structure during the Development Phase.

5.5.2 Project Construction and Start-up Phase

The detailed engineering and design studies made during the development phase provide the basis for estimating the construction costs. Construction cost estimates should include the cost of the project facilities and all the necessary additional infrastructure costs, which have in general to be borne by the project sponsors, to support project construction. In addition to these costs, these estimates should also include a contingency factor to cover possible design errors or unforeseen costs. The size of this factor depends on uncertainties that may affect construction, but a 10% is generally viewed as sufficient in most projects if the design has been finalized. Construction cost estimates have also to take into account the project's working capital requirements as well as the interest payments due during the construction phase.

Generally, the construction phase is not considered as completed before the project facility has been operated for a successful test period, which can last several years depending on the complexity and technological innovation of the project facility.

During the construction phase, the requirements of funds increase considerably and project sponsors often are not the ability to support all the construction costs. Thus, equity investments must be completed by other sources of funds. During this period, financing comes mainly from debt financing. Figure 5.4 shows the financing structure used during the construction phase before project completion.

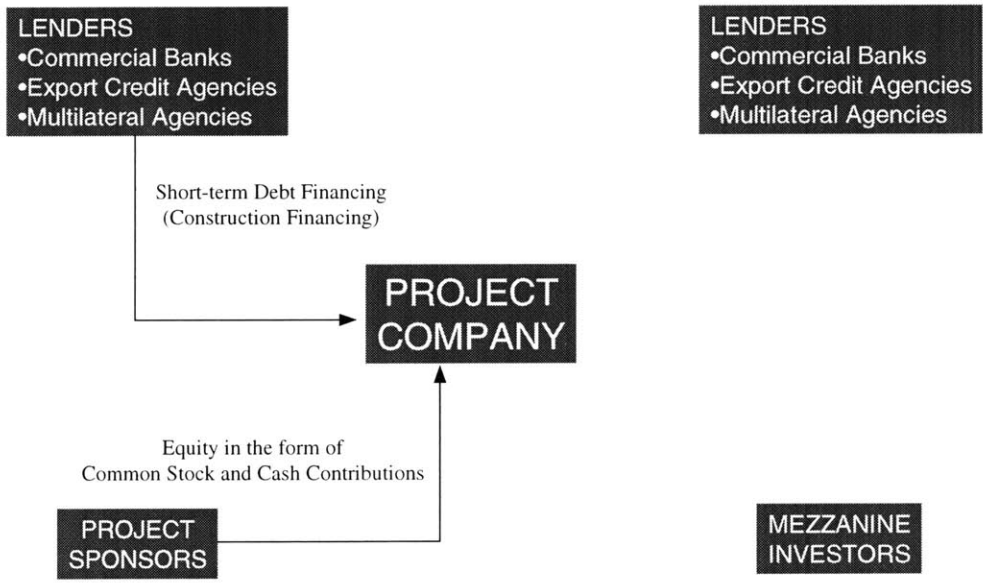

Fig. 5.4: Financing Structure during the Construction Phase before project completion.

In this period, debt increases as a result of the use of a credit line, typically provided by commercial banks at high interest rates, and the addition of the interest to the total debt. Therefore, the project leverage increases and becomes very high. At that particular time, the project is highly exposed to the financial

risk. Figure 5.5 shows the financing structure at the time of project completion where the construction debt is taken out with the permanent debt.

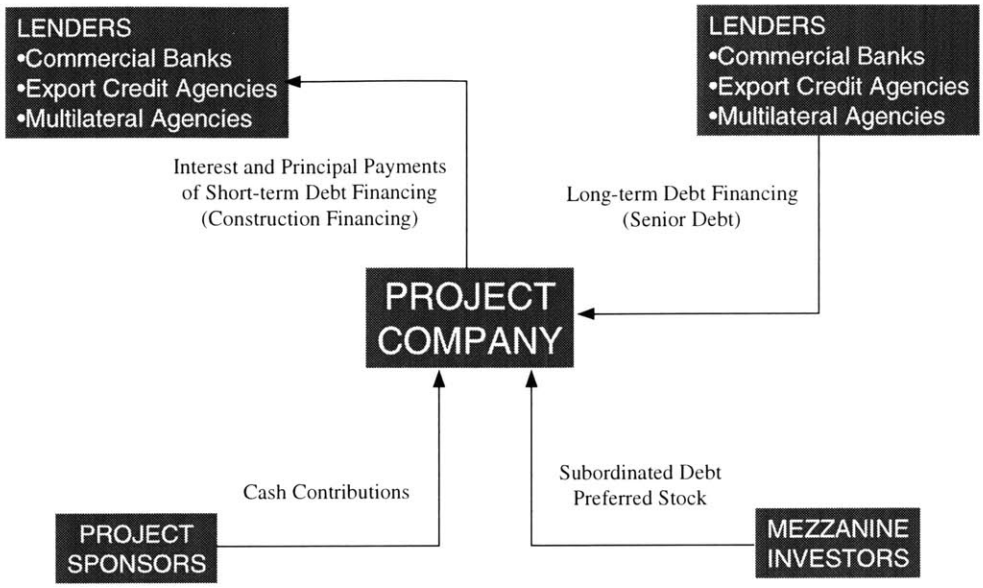

Fig. 5.5: Financing Structure at the time of project completion.

5.5.3 Project Operation Phase

During the operation phase, the project commences to generate revenues, which are used to pay back the project debt and eventually provide return to equity holders on their investments. Over time, the project debt and financial risk decline. During this phase, the project does not require any major funds and the generated project cash flows are to be sufficient to cover debt service and operating and maintenance expenses. Nevertheless, in the early stages of the operation phase, additional working capital can be needed to operate successfully the project facility, and it is generally provided by project sponsors.

Thereafter such additional working capital, if needed, is provided by project cash flows. Figure 5.6 shows the financing structure used during the operation phase.

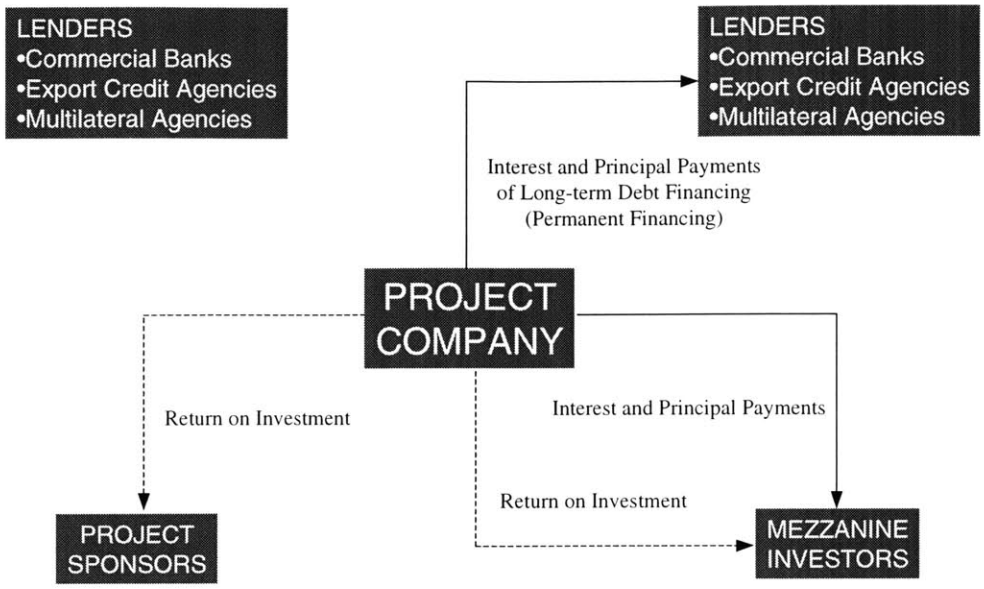

Fig. 5.6: Financing Structure during the Operation Phase.

6 Examples of International Project Finance Transactions

The previous chapters illustrated the framework of international project finance transactions. The present chapter seeks to be more practical and, through a series of projects financed on a project-financing basis, to show the variety of applications. After a description of each project, the ownership and financing structures are presented. Finally, presentation of each project is completed by establishing the key elements that have made the project specific.

6.1 The Indiantown Cogeneration Project

The Indiantown Cogeneration Project[23] involves the construction and operation of a coal-fired cogeneration facility having a net design electric generating capacity of 330 megawatts, in Martin County, Florida.

A limited partnership was formed in October 1991 to develop, own, construct, and operate the project facility. The partnership entered into a 30-year power purchase agreement with Florida Power & Light Company.

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[23] This example is based on Finnerty, John D., *Project Financing: Asset-Based Financial Engineering,* New York: John Wiley & Sons, Inc., 1996.

General partners are Toyan Enterprises, a wholly owned subsidiary of Pacific Gas & Electric Enterprises, and Palm Power Corporation, a wholly owned subsidiary of Bechtel Enterprises, Inc. The limited partner is TIFD III-Y Inc., a wholly owned subsidiary of General Electric Capital Corporation. The ownership structure is illustrated in Figure 6.1.

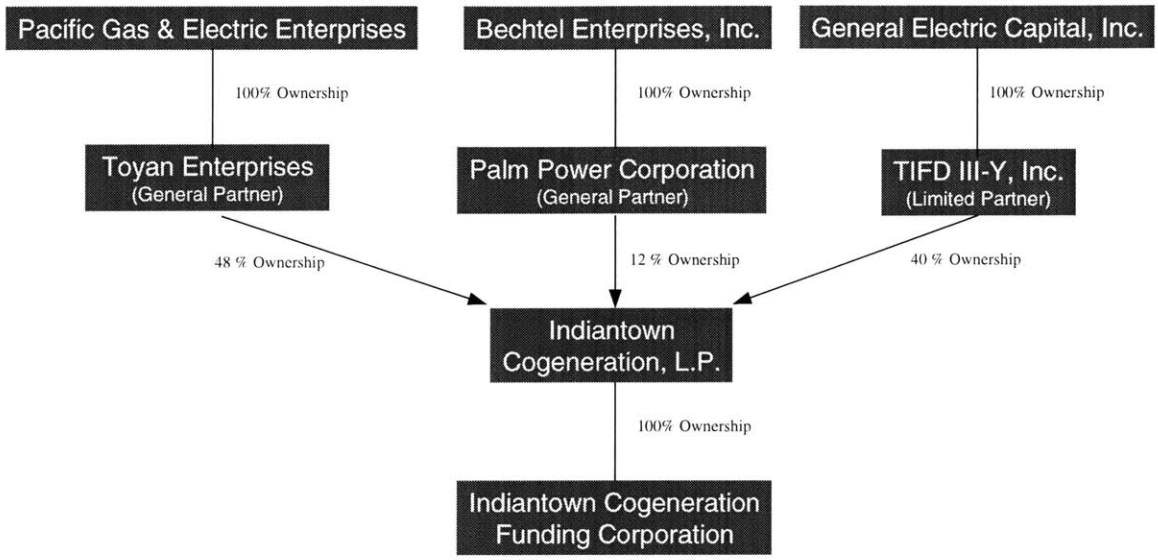

Fig. 6.1: Simplified ownership structure for the Indiantown Cogeneration Project.

The initial construction financing for the project came from four sources:

- Commercial bank loans, which reached $202 million as of June 1994;
- A $113 million issue of tax-exempt bonds;
- A $139 million loan from GE Capital;
- $100,000 of partners' capital.

Indiantown (the project company) and Bechtel Power Corporation entered into a turnkey construction contract, which covered the design, engineering, procurement of equipment and all materials, construction, start-up, and testing of the cogeneration facility. The fixed price for the cogeneration facility under the construction contract was $439 million. The construction began on October 1992 and Bechtel Power was obligated to achieve substantial completion by January 1996. Final completion had to occur no later than December 1996. Figure 6.2 shows the schedule for the project - from the formation of the limited partnership responsible for the development of the project to its completion.

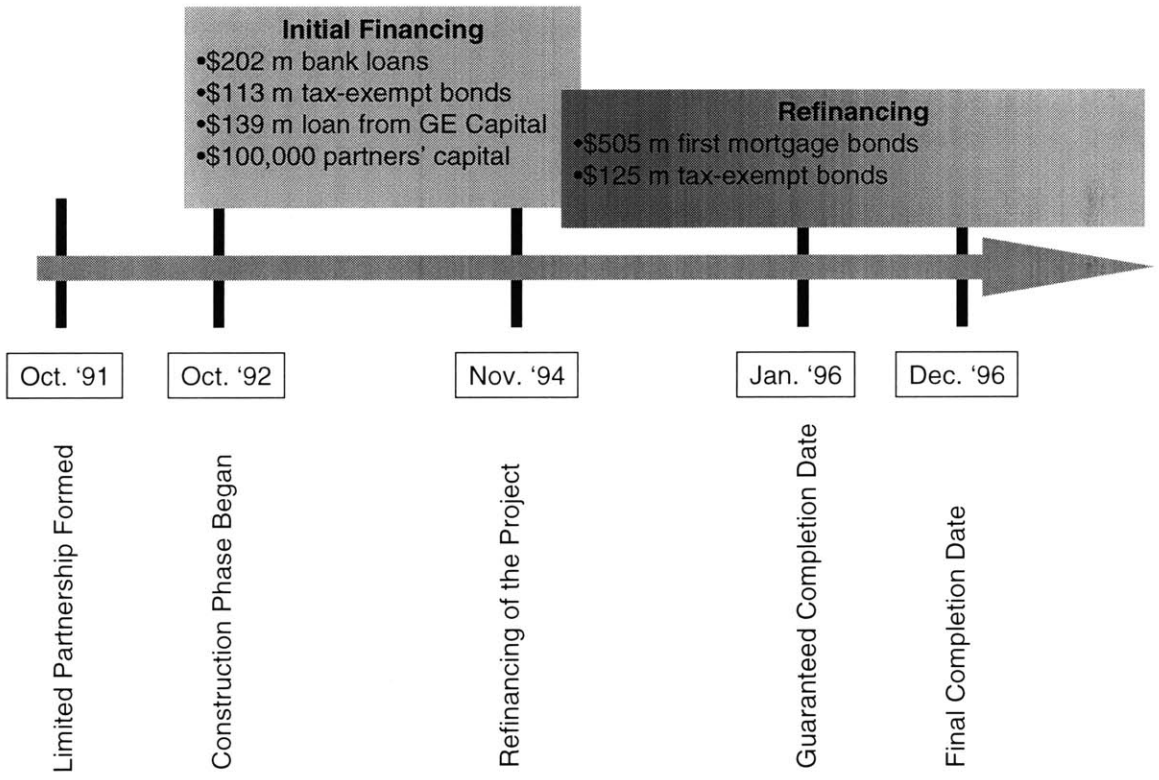

Fig. 6.2: The Indiantown Cogeneration Project schedule.

On November 1994, the partnership refinanced the project with the proceeds from the sale of:

- $505 million of first mortgage bonds issued by Indiantown;
- $125 million of tax-exempt bonds issued by the Martin County Industrial Development Authority and lent to Indiantown.

Figure 6.3 shows the project's capital structure reached just after the refinancing of the project.

	Amount	Percent
Long-term Debt		
First Mortgage Bonds	$ 505	65.6 %
1994 Tax-exempt Bonds	$ 125	16.2 %
Total Long-term Debt	$ 630	81.8 %
Equity		
Partners' Equity	$ 140	18.2 %
Total Capitalization	$ 770	100 %

Fig. 6.3: Capital structure upon project refinancing (Dollar Amounts in Millions).

The project financing arranged for the Indiantown Cogeneration Project illustrates that the public debt market can be a potential funding source for projects involving low technological risk. This example also shows that, under certain conditions, the refinancing of a project may take place prior to its completion. Nevertheless, such refinancing is rare in project financing since, in general, the construction risk is borne by either the construction company or the project sponsors. In this particular case, refinancing has been reached because of (1) the high quality and reputation of the project's sponsors, (2) the strength of the project's contractual arrangements (Power Purchase Agreement, Turnkey

Construction Contract, Coal Purchase Agreement, Coal Waste Transportation Agreement...), (3) the implementation of a conventional proven technology, and (4) the high probability of project completion on the due date, and within the project budget.

6.2 The Melbourne City Link Project

The AUD$1.8 billion Melbourne City Link (MCL) Project[24] is Australia's largest privately funded public infrastructure project. MCL is a BOOT toll road project. It connects three of the city's major freeways and improves traffic movement around and into the city center.

In 1995, the state government of Victoria granted Transurban, the project company, a concession to design and construct City Link and to operate it and levy tolls for a period of 34 years. The concession essentially provides Transurban with the right to build, own, and operate the project facility before its transfer back to the state.

The project's sponsors Transfield and Obayashi Corporation formed a joint venture to develop, construct, and operate the City Link Project. Transfield is a leading Australian infrastructure developer, which was successfully involved in

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[24] This example is based on Arndt, Raphael H., " Risk Allocation in the Melbourne City Link Project, " *The Journal of Project Finance*, Fall 1998, and information from http://www.transfield.com.au/ and http://www.mcla.vic.gov.au/.

the Sydney Harbour Tunnel Project opened in 1992. Obayashi Corporation is one of the world's largest companies with extensive experience in road, bridge, and tunnel construction.

The financial bottom line for this project was to construct and operate City Link at minimal cost and at no risk to the Victorian taxpayers. It was funded by a sophisticated financial package.

The project's sponsors raised AUD$510 million in equity. Of this, AUD$455 million came from listed equity in Transurban, which was listed successfully on the Australian Stock Exchange on March 1996, and AUD$55 million from deferred equity from the sponsors.

The total debt raised was AUD$1.365 billion giving the project a debt-to-equity ratio of 1,365 / (1,365 + 510) = 73 %. Of this, AUD$865 million was traditional syndicated senior debt. Transurban used a separate, subordinated bank loan of AUD$150 million to purchase the electronic device motorists must place in their vehicle to use the roads. Finally, AUD$350 million came from rated bonds.

In order to better allocate and share project risks, the project participants agreed to develop and use a new tool, known as the Material Adverse Effect (MAE) Regime. This tool was designed to provide flexibility over the life of the project and cope with unforeseen risk events. The goals of the process are to resolve unforeseen events that can impact the project's profitability and to avoid triggering traditional dispute resolution mechanism. This process is divided into four stages:

- The occurrence of an event that can cause a risk for the project;
- The event is material, meaning that it has an effect on the ability of a project sponsor to repay the project debt in accordance with the amortization schedule or the level of disbursement, and the expected project equity return to Transurban's investors;
- The opening up of negotiation between the parties to resolve the issue and to determine the likely consequences of the event occurring;
- Assuming that consensus is reached, the form and nature of redress are determined from the following range of options:
    - Amending the toll calculation schedule;
    - Varying the concession period;
    - Altering the risk allocation;
    - Varying the rights of the state to receive payments;
    - Requesting lenders to restructure project financing arrangements;
    - Asking the state to make a financial contribution to the project.

Such variety of compensation methods allows greater flexibility in determining what action to take to resolve any unforeseen event that can impact the profitability of the project. This process is dynamic and flexible enough to resolve large issues that a project can encounter during its lifetime.

Transaction and monitoring costs associated with this process, which may be quite high, may preclude its utilization. Nevertheless, such costs are expected to decrease with parties involved in its development gaining more experience. Moreover, the apparent success of the MCL project proves that complex issues can be efficiently resolved throughout the MAE process.

The project financing arranged for the Melbourne City Link Project, which has been opened to the public since the beginning of year 2000, illustrates that risk allocation and risk sharing are mechanisms that play a significant role for ensuring the success of a project finance transaction.

6.3 The Tribasa Toll Road Project

Mexico has developed and realized an extensive system of toll roads in the recent years[25]. In general, these roads have been financed either with public-sector funds or by public programs designed to stimulate private-sector participation in infrastructure development. In the case of private-sector participation, the concession holder, who is responsible for arranging project financing, typically has the right to build or improve, operate, and maintain a highway for a specified period of time before its transfer back to the government.

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[25] This example is based on Finnerty, John D., *Project Financing: Asset-Based Financial Engineering*, New York: John Wiley & Sons, Inc., 1996.

According to the public program for infrastructure development, Grupo Tribasa, throughout two wholly owned subsidiaries, obtained two toll road concessions in Mexico. These concessions entitled Grupo Tribasa to construct, operate, and maintain these two toll roads.

A combination of equity financing from the project's sponsor and other local sources of financing funded the construction and initial operation of both toll roads.

In 1993, the project was refinanced after Grupo Tribasa had successfully operated the toll roads for a few years. The funds raised for the refinancing of the project came from $110 million of 10.5 percent notes issued under the Rule 144A.

Rule 144A, adopted in April 1990 by the Securities and Exchange Commission, is a rule that liberalized the restrictions that had existed on trading unregistered debt and equity securities. Prior to the adoption of Rule 144A, the U.S. securities laws imposed significant restrictions on the resale of unregistered securities, which rendered such securities illiquid. Thus, private placement buyers, interested in acquiring these securities, demanded a higher interest rate, which penalized the resale of such securities. With the adoption of Rule 144A, debt securities issued under Rule 144A are considered "quasi-public" securities. Consequently, the issuer can sell its securities to investment banks that in turn resell them to qualified institutional buyers. These institutional buyers of Rule 144A debt offerings generally are large life insurance companies. These companies are receptive to such securities if they are rated investment-grade by

major rating agencies, which apply to these securities the same criteria that they use to rate public debt securities. Consequently, only completed and successfully operating projects may issue Rule 144A debt securities.

Although the Tribasa Toll Road Project met all of these requirements, the profitability of the project, and therefore the creditworthiness of the notes are still dependent on the volume of traffic using the roads. Grupo Tribasa commissioned a detailed traffic report, prepared by independent experts, to enable prospective purchasers of the notes to quantify the economic risks of the toll roads, and therefore the credit risks of the notes. The traffic report provided a detailed operating history of the toll roads and also analyzed the business and financial prospects of the project.

The Tribasa Toll Road Project and its refinancing illustrates that the project financing technique can also be used for refinancing existing successfully operated projects. It demonstrates that capital can come from the international financial market for infrastructure projects that are able to put in place strong credit support arrangements.

6.4 The Sydney Harbour Tunnel Project

In 1987, the New South Wales State government decided to build a tunnel, close to the Sydney Harbour Bridge, to provide a second harbour crossing[26]. The Sydney Harbour Tunnel is a 4 lane, 2.3-kilometer road tunnel.

From December 1985 to March 1986, Transfield and Kumagai Gumi, in joint venture, undertook a pre-feasibility study. They completed it by a detailed feasibility study carried out between March and December 1986. This feasibility study involved the detailed planning and design work for the development of a complete BOOT proposal for the project.

Final agreement to undertake the project on a BOOT basis was reached in June 1987 between the Sydney Harbour Tunnel Company (jointly owned by Transfield and Kumagai and serving as project company) and the Roads and Traffic Authority of NSW. Construction of the tunnel commenced on July 1987, was completed on schedule, and opened to traffic on August 1992. The concession agreement entitled the Sydney Harbour Tunnel Company to operate the tunnel for 30 years.

The Sydney Harbour Tunnel agreement fixed the capital cost of the project at AUD$554 million. In addition to the direct design and construction

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[26] Information in this section was provided by *Project Financing*, A Supplement To Euromoney, August 1988.

cost, interest payments, government taxes, and other costs brought the total project value to be financed at AUD$770 million.

Westpac Bank provided an innovative package to finance the project, which it had worked for two years to put together. Funds for the project came from three sources:

- Loans from the Sydney Harbour Tunnel Company partners of AUD$40 million (AUD$20 million each);
- A loan from the government raised from excess Sydney Harbour Bridge toll revenue earned during construction of the tunnel, totaling AUD$223 million and payable in 2022;
- AUD$506 million from 30-year bonds.

The Sydney Harbour Tunnel Project was the first BOOT project in New South Wales. Its apparent success encouraged successive governments to develop a number of other Australian urban roads using this innovative and cost effective method of delivery. The Sydney Harbour Tunnel has transformed the Sydney Harbour crossing with significant reduction in travel times and a marked improvement in reliability for both public and private transport.

The tunnel is currently exceeding its revenue projections. Nevertheless, the Sydney Harbour Tunnel agreement has been criticized as a public underwriting of private-sector profits. The agreement was structured in such a way that, while the private sponsors agreed to bear some development, design, and construction risks, the majority of the financing, demand, and operational

risks were left with the government. Indeed, the state government not only directly contributed to the costs of construction, but also underwrote the revenue stream of the long term indexed bonds, which was the main financing instrument, irrespective of the actual usage of the road.

Conclusion

Project financing is a well-known financing technique that has a long history. Recently, infrastructure, oil and gas, telecommunication, and other types of large capital-intensive projects have been successfully developed by private entities that have relied on project financing as a financing technique.

Project financing is a financing technique by which project lenders agree to look to the expected project cash flows as the basis of their credit analysis and as the main source of repayment, independently of the credit standing of the project developers. In other words, "project financing can be arranged when the project is capable of standing alone as an independent economic unit."

This thesis has examined the ownership and financing structures that are currently used to shape a project finance transaction. Throughout the description of mechanisms used both to select the best form of business organization to undertake a project and to structure the financial package supporting the financing of a project, this thesis has proposed a basic framework for developing a project finance transaction.

Selection of the ownership structure for a project is an important step in project development. The determination of the best form of business organization to undertake a project is dependent on a myriad of factors, such as proportion of debt and equity investment, tax and accounting considerations, and legal and regulatory issues. There are basically four ownership structures that

are currently used for developing a project on a project-financing basis: (1) corporation, (2) general partnership, (3) limited partnership, and (4) joint venture. Each of these basic forms of business organization has its advantages, which can make it attractive, but also its disadvantages. For example, the corporate form of organization, which is probably the most common ownership structure selected for structuring a project finance transaction, offers the advantage of limited liability and the benefits associated with the creation of a separate legal entity. Nevertheless, the borrowing cost for the project sponsors could be higher since the debt leverage of the project company may be greater than that of the project sponsors. Another ownership structure frequently used is the general partnership form of organization, typically selected when the project sponsor does not have sufficient financial resources or expertise to pursue a project on its own. So, the project sponsor, by forming a partnership, has the opportunity to undertake a new profitable project. This advantage is, however, balanced by the fact that the general partnership structure does not afford limited-recourse liability. Therefore, the selection of the best form of business organization remains a difficult process, which is highly dependent on the project itself.

The project company usually enters into project contracts with different project contractors for the purposes of the development of the project. Some of these project contracts, such as the off-take agreement, the supply agreement, or the construction contract, are designed to give some certainty to the project. For example, the off-take agreement provides certainty that the project, after its final completion, will generate sufficient cash flow to cover its operating and

maintenance expenses and meet all its debt service obligations. Similarly, the supply agreements give some certainty in respect to the availability and the price of the inputs needed to produce the project's outputs.

The object of the contractual arrangements is also to provide all the parties involved in a project with the incentives to act efficiently by transferring the risks to those best able to manage them. For example, construction risks are borne by the constructor and the risk of insufficient demand of the project's outputs is borne by the output purchaser. These contractual arrangements are complemented by financial arrangements that constrain the project participants to act on the interest of the project.

The financial arrangements are designed to ensure that a project will have sufficient financial resources to be completed and operated during its lifetime. These financial arrangements provide the project developers with assurances that all the needed funds for the development of the project are secured. They also provide the project lenders with guarantees of the payment of debt service by the project company. In project financing, the funds required for the development of a project come from three types of capital: equity, quasi-equity, and senior debt. Each type of capital reflects the level of exposure of the relative investor, and its expected financial rate of return. For example, equity capital refers to funds put into a project by the project sponsors or by passive investors, in the form of common or preferred stock. So, the equity holders are the last in priority for repayment in case of default of the project company. Consequently, since they are highly exposed to project risk, they demand a substantial rate of

return to bear all this risk. This source of capital represents in general less than 1/3 of total capital. On the contrary, commercial banks advance funds for a project in the form of senior debt, which is not subordinated to any other liability.

One feature common to any project company is its high concentration of debt. Several reasons are generally given to explain this debt structure: the low cost of bankruptcy for project companies, preferred tax and accounting considerations, or protection against political risk.

The financing of a project is a dynamic process and requires different forms of debt financing instruments. So, the development of a project requires the project sponsors to arrange both construction financing and permanent financing. Construction financing, provided in the form of short-term debt, is needed to ensure the availability of sufficient financial resources to complete the construction phase of a project. Permanent financing, provided in the form of long-term debt, is applied to take out the construction loan and provide sufficient cash to operate the project facility. Permanent financing usually consists of senior debt or a combination of subordinated and senior debt. Sometimes, the long-term debt financing for a project is also provided by capital market instruments. These financial instruments are in general not an option for financing the construction phase of a project. This is simply because capital market investors are reluctant to bear construction risk. On the other hand, once the project has been completed and operated for a reasonable period of time, capital market investors may be prepared to purchase project bonds to refinance

the project. So, the development of sophisticated capital market products provides the project sponsors with an increasing flexibility to finance a project.

The examples provided in Chapter 6 show that the project financing technique is a powerful tool for developing and financing large capital-intensive projects. These examples point out that project contracts are the foundation for the success of a project finance transaction. To be efficient, these contracts must be consistent and work together as a whole. These examples also illustrate that most of the issues relating to the structuring of a project finance transaction can be addressed by project contracts. For example, in the Indiantown Cogeneration Project, the off-take agreement was critical for supporting the debt financing by ensuring the project would generate sufficient cash flow. This project shows also the important role of the project sponsors. Indeed, the refinancing of the project, which has been reached before the end of the construction phase, came essentially from the reputation of the project sponsors. This example reveals that for projects involving low technological risk developed by reputable project sponsors, the project financing technique has begun a common financing tool. The Melbourne City Link Project indicates that a concerted and dynamic risk allocation is crucial to resolve unforeseen events that impact the project's profitability. The Tribasa Toll Road Project illustrates that the project financing technique can be used for the refinancing of an existing successfully operated infrastructure project. This example also shows that the refinancing can be reached by tapping into the international financial markets.

Finally, to be successful, the project financing technique must carefully address the risk allocation process, the determination of the form of business organization, and the arrangement of a consistent set of contractual and financial agreements. Resolution and integration of these three elements are the challenge of any project finance transaction.

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